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AGRICULTURE

No. 148

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PROGRESS OF RECLAMATION BY STATE FARMS REPORTED

Heilongjiang Food Grain Bases

Beijing ZHONGGUO NONGKEN [CHINESE AGRICULTURAL RECLAMATION] in Chinese No 1, 24 Jan 81 pp 5-7

[Article: "Summarize Experience To Hasten Progress in Building Commercial Food Grain Bases"]

[Excerpts] The Chinese Communist Party Central Committee has decided to establish commercial food grain production bases in the Northeast. This is an important measure to promote development of our nation's agricultural production. It is also a big event to make the broad masses of farmers and agricultural reclamation workers in the Northeast region prosperous as quickly as possible. Our Jeilongjiang Reclamation Area shoulders important responsibilities in establishing commercial food grain bases in the Northeast. We must unite and struggle hard, liberate ideology, develop superiority and strive to produce a total yield of food grains and beans of 8.5 billion jin by 1985 and submit to the state 4.5-5 billion jin of commercial food grains. Efforts should be exerted to make ours a model area and to make new contributions to establishing commercial food grain bases, with food grains and beans as the main crops.

Our reclamation area now has 105 farms, 30 million mu of cultivated land, mainly distributed in the Plains of the Three Rivers in the eastern part of our province, the Songnen Plain in the western part and the foothills of Daxinganling and Xiaoxinganling. The total area is 102.8 million mu. The eastern region has a level topography, the fields are concentrated and the expanses are connected. The soil is mostly meadow, the soil texture is relatively fertile, and water conservancy resources are rich. The frostless period is 120 to 130 days, suitable for the growth of wheat, soybean and corn. The western region is mostly chernozem and meadow soil, the chernozem layer is thick and the soil is fertile. The frostless period is 90 to 120 days, suitable for planting wheat, soybean, beets and flax. In addition, there are 7.46 million mu of grasslands suitable for grazing, secondary forests of 5.6 million mu, 2.64 million mu of water surface that can be used to cultivate fish, and a large area of reed ponds. These rich natural resources provide favorable conditions for the development of diversification in the reclamation area. In particular, there are over 24 million mu of wasteland that can still be reclaimed. This also provides favorable conditions for increasing the total yield of food grains and beans and for rapidly increasing commercial food grains. As we speed up the progress of establishing commercial food grain bases, we must conscientiously summarize the experience and lessons of the past 30 years, we must firmly implement the policy of readjustment according to the spirit of the Third Plenum of the party, and we must stand on the presently available conditions, push the advantages forward and avoid shortcomings, develop our own superiority, and implement the procedure of making the cadres responsible for finances and the joint production responsibility system. While planting the 30 million mu of cultivated land properly and increasing the unit area yield, we must also actively reclaim wasteland and expand the area of cultivated land according to plan so as to assure large increases in the yields of food grains and beans, the labor productivity rate and the commodity percentage.

The historical experience of 30 years in the reclamation area shows that actively expanding the area of cultivated land while exerting efforts to increase the unit area yield, implementing walking on two legs, is correct and feasible.

From 1949 to 1960, conditions in our reclaimed area were poor, the foundation was weak, yields were low. During this period, the average per mu yield of food grains and beans was only 126 jin, the total yield was 6.17 billion jin, and 2.51 billion jin of commercial food grains were submitted to the state. From 1961 to 1967, while reclaiming 7.97 million mu of wasteland, the average per mu yield of food grains and beans showed an increase of 37 percent over that during the first stage, the total yield of food grains and beans reached 14.7 billion jin, and 7.3 billion jin of commercial food grains were submitted to the state. From 1968 to 1976, another 9.71 million mu were reclaimed, the average per mu yield of food grains and beans increased another 10 percent over that of the second stage, the total yield of food grains and beans was 30.8 billion jin, and 13.8 billion jin of commercial food grains were submitted to the state. During the 4 years from 1977 to 1980, a total of 5.13 million mu were reclaimed, the average per mu yield of food grains and beans increased 21 percent over that of the third stage, the total yield of food grains and beans was 21.2 billion jin, and 10.1 billion jin of commercial food grains were submitted to the state. These facts show that for the past 30 years, although our reclamation area encountered various obstacles and the path was circuitous, during the continuous expansion of the area of cultivated land the total yields of food grains and beans and the amount of commercial food grains multiplied. The unit area yield also continuously rose. Especially in 1980, the broad masses of reclamation area workers worked hard: the total yield of food grains and beans reached 6.2 billion jin, 3.2 billion jin of commercial food grains were submitted to the state, the average per mu yield of food grains and beans was 240 jin, and profits totaled 150 million yuan—all creating the highest record in history.

Viewing the present situation of the yield of food grains and beans in the reclamation area, we see that because of the different levels of planting techniques, production management, and especially the execution of the joint production responsibility system and the standard operations, the differences among the farms are great. In 1979, for example, the average per mu yield of the entire reclamation area was 211 jin, the highest reached 353 jin and the lowest was only 86 jin, a difference of over fourfold between the highest and the lowest yields. It can thus be seen that the potential for increasing the unit area yield of the present cultivated land is very great. Forceful measures must be taken to improve the ability to prevent drought and resist waterlogging, mechanized standard operation must be insisted upon, superior varieties must be popularized, application of organic fertilizers and chemical fertilizers must be increased, the various new techniques for the development of agricultural production must be actively popularized and applied, cadres at all levels and all types of agricultural technicians must be trained, the level of production management must be improved, the economic policy of the party must be implemented well, the many forms of the joint production responsibility system that are effective must be conscientiously implemented, and the enthusiasm of the broad masses of workers must be mobilized so that the yield of the presently available cultivated land can be increased by 5 percent each year on the present foundation and thus the total annual yield of food grains and beans can be increased by over 200 million jin.

The present cultivated land is the basis of our production, the battlefield for advancement, and efforts should be made to plant and manage crops well. But this alone is not enough. We still have conditions that can be utilized and we still have superiorities that can be developed. Compared to the farm villages of the entire nation, an important characteristic of our reclamation area is that there are few people and a lot of land, and the degree of mechanization is higher. Now, throughout the whole reclamation area, each worker in the planting industry is in charge of an average of 110 mu of cultivated land. If farm machinery becomes more complete and if specialization of production is gradually realized, the amount of cultivated land per worker can be increased further. The labor production rate and the commodity percentage will correspondingly increase. Therefore, we must develop our own advantages, develop our own superiority, and exert efforts to develop wasteland resources according to state plans. Practice shows that within a short period, reclamation of wasteland is an effective measure to rapidly increase yield and the amount of commercial food grains. Taking the 6 years from 1974 to 1979 as an example: during this time each year we reclaimed from a minimum of 620,000 mu to a maximum of 2.16 million mu of wasteland. The accumulated area of wasteland reclaimed during these 6 years was 6.37 million mu. An increase of 4.088 billion jin of food grains and beans was harvested. A comparison of 1979 with 1974 shows the total yield increased 1.645 billion jin. Of this, 1.55 billion jin of the increased yield resulted from harvests from expanded areas of cultivated land due to reclamation, constituting 91.5 percent of the total increase in yield. The increase in commercial food grains was 935.68 million jin. Of this, 750 million jin resulted from harvests from expanded areas of cultivated land due to reclamation, constituting 80 percent of the total increase. This shows that in recent years, while the increase in per mu yield has been one of the factors that enabled our reclamation area to record continued large-scale increases in food grains and beans and commercial food grains, the main factor is still reliance upon expansion of the area of cultivated land due to reclamation. Therefore, up to 1985, we should continue to reclaim wasteland as an important means to hasten the establishment of commercial food grain bases and exert efforts to realize the present goal of struggle.

Now, however, when reclamation is mentioned, some comrades become frightened. They are afraid of being blamed for destroying the ecological balance and of being accused of creating disasters for later generations. In view of the practice of the past 30 years, such worry is unnecessary. The primitive natural ecological balance is not necessarily completely beneficial to man. Reclamation requires changing the balance of the natural ecological system, but the problem is not whether or not to change, but whether or not such a change is beneficial to the development of productivity, and in changing the old primitive balance, whether a new and high-level balance can be established. Over 30 years ago, when the great northern wasteland was not developed, most of the regions were marshes and wasteland, there were few people, production was low, and the economy was backward. Under the efforts of the subordinates of the party and the state, several 100,000 officers, soldiers and handicapped military men who changed their vocation, workers and broad masses of youths who went to support the border provinces and regions, and intellectual youths from the cities all entered the great northern wasteland to carry out reclamation and production; they changed the balance of the natural ecological system of marshes and wasteland of the time. Up to now, 30 million mu of fertile and good fields have been developed in the great northern wasteland, 105 state-run farms and over 20 relatively large industries and enterprises have been established, and a total of 72 billion jin of food grains and beans (an average annual increase of 19.9 percent) has been produced. A total of 33.7 billion jin of commercial food grains and beans has been submitted to the state; over 10 million mu of low, damp and easily waterlogged cultivated land have been treated and controlled; irrigation projects covering 1.5 million mu of cultivated land have been built; houses covering 24 million square meters have been built; sandy gravel highways of 6,500 km have been built; and power lines of 20,000 km have been connected, forming over 150 small towns.

According to state plans, by 1985 our reclamation area must reclaim 10 million mu of wasteland, an annual average of 2 million mu. It is indeed difficult to complete such a heavy task within such a short period. But with the strong support of the nation, we can fully develop the function of presently available agricultural machinery and learn from past experience in reclamation and building farms. With 2,500 agricultural companies, the conditions for completing this glorious task are good, and the broad masses of reclamation area workers are full of confidence in victory.

Jiangsu Province Successes

Beijing ZHONGGUO NONGKEN [CHINESE AGRICULTURAL RECLAMATION] in Chinese No 1, 24 Jan 81 p 8

[Article by Yang Daolian [2799 6670 3425] of the Jiangsu Agricultural Reclamation Bureau: "Adjust the Structure of Agriculture for Overall Development of Production"]

[Excerpt] The outstanding characteristics of the natural conditions of each farm in the Jiangsu Province agricultural reclamation system are that they are along rivers, near the sea and lakes, the water surface resources are expansive, there are more wastelands, temperatures are higher, rainfall is abundant, natural resources are rich. This means that conditions for overall development of agricultural production are superior.

Since the 1960's agricultural production in our province's agricultural reclamation system has developed very greatly. In 1979, the yield of food grains, cotton and oil-bearing crops and their output value again reached a new high level, showing an increase of 17, 2.7, 24.5 and 7 percent over the previous high record reached in 1978. In particular, the total value of agricultural production (calculated in fixed prices) showed an increase of 2.7 times over the 46.63 million yuan of 1965. Although natural disasters were serious in 1980, the yield of food grains and beans increased by over 10 million jin over that of 1979, the total yield reached 400 million jin, while cotton and oil-bearing crops decreased. The structure of the five sectors of agriculture, forestry, livestock production, sideline production and fishery shows that the proportion of the value of production of forestry, livestock production, sideline production and fishery is still very low. In 1979, the proportion of the production value of the planting sector and the other "four sectors" were as follows: the production value of the planting sector constituted about 83 percent, the production value of the "four sectors" was about 17 percent, forestry constituted 0.8 percent, livestock production constituted 7 percent, sideline production constituted 9 percent and fishery constituted 0.3 percent.

Guangdong Rubber Plant Farm

Beijing ZHONGGUO NONGKEN [CHINESE AGRICULTURAL RECLAMATION] in Chinese No 1, 24 Jan 81 p 14

[Article by Lin Mingjiao [2651 2494 5754] and Huang Kefan [7806 0344 0416] of the Longjiang Farm in Guangdong Province: "Exploring Ways To Increase the Economic Achievements of Farms"]

[Excerpt] Viewing the actual situation of our farm, the problem of striving for economic results is very outstanding. At present, our farm has over 8,200 workers, 62,900 mu of rubber plants, and owns fixed capital of a net value of 22.96 million yuan. Each year our farm submits to the state a profit of 8.5 million yuan, and each worker's annual production value averages 3,700 yuan. Such a production level is not on a par with the massive capital invested by the state. The economic figures are as follows:

1. The area reclaimed for rubber plants was large but the existing area now is small; the loss was great. In 1956, when the farm was organized and established, the entire farm had a total of 121,000 mu of rubber plants. The state had a cumulative total of 28.94 million yuan worth of rubber production. Now, only 62,910 mu of rubber plants remain and the value of the rubber is only 21.57 million yuan, a loss of 7.37 million yuan.

2. Agricultural and sideline production suffer losses each year. According to statistics of 1977, each worker produced 4.4 shi jin of rice grains and 2.2 shi jin of cotton; the cost per worker to produce one jin of rice grains was 5 jiao, 7 fen; the cost for producing one jin of peanuts was 1 yuan, 1 jiao, 3 fen. During the years of "learning from Dazai" in a big way, the problem of neglecting economic results was especially outstanding. At that time, over 300 workers were employed to move over 300 cubic meters of earth, 700 to 800 yuan were spent to

create one mu of fields, and because the soil quality of the newly created fields was poor and water sources were deficient, there was widespread planting and small harvests. During the 1970's, our farm's production of food grains, oils, meats and vegetables suffered annual losses of 800,000 to 1 million yuan; income from production averaged only 1 jin of meat and 4 liang of oil per month and half a jin of vegetables per day per worker.

3. The years of management of rubber were extended, increasing the cost of rubber. Rubber plants enter production after being planted for 7 years, but there are 262,900 rubber plants in our farm that have been planted for over 10 years but still cannot produce and be sapped, constituting 54 percent of the number of plants and covering 10,000 mu. If the investment is extended for 4 years, then at a cost of 55 yuan per mu per year, the total increase in cost will be over 2.2 million yuan.

Beijing's Nanjiao Farm Losses

Beijing ZHONGGUO NONGKEN [CHINESE AGRICULTURAL RECLAMATION] in Chinese No 1, 24 Jan 81 p 15

[Article by Li Shixiong [2621 0099 7160], Wang Jiyao [3076 4949 1031] and Zhang Hongjun [1728 4767 6511]: "Why Did Nanjiao Farm Increase the Yield But Harvest Less?"]

[Text] Recently, we conducted an investigation of the economic results of agricultural production of the Nanjiao Farm in Beijing city from 1970 to 1979. We discovered that although the farm produced relatively large-scale increases in yield, because economic results were neglected, production costs greatly surpassed the income from the increased yield, resulting in an increased yield and decreased harvest. This is a profound lesson.

Nanjiao Farm has a total of 160,000 mu of cultivated land, 44,000 laborers and 125 agricultural production teams. It is a socialist agricultural enterprise mainly engaged in agriculture but also engaged in overall development of agriculture, livestock production, industrial production and sideline production. During the past 10 years, the farm has developed industrial and sideline production and other diversifications in a big way. The economic results have improved. But although the yield of agricultural production continued to increase, the costs of agricultural production also increased greatly, resulting in increased yields and decreased harvests. During these 10 years the farm produced an annual average increase of 3.52 million jin in total yield of food grains, an increase of about 5 percent, the per mu yield stabilized at 800 to 900 jin, but the cost of agricultural production increased on a larger scale. Comparing 1978 with 1970, agricultural production cost increased by 4.4 million yuan, an increase of 89.4 percent, while income from agriculture increased only 3.3 million yuan, an increase of 22.2 percent. The result was a net reduction in income of 1.1 million yuan. Why did such a situation of increased yield and decreased harvest occur? The main reason is neglect of the economic results manifested in the following aspects:

1. Large Increase in Machinery Equipment Not Based on Actual Needs

During the 10 years, investment for purchasing agricultural machinery reached 17 million yuan and investment in agricultural machinery per mu averaged 137 yuan. The number of large- and medium-size tractors (combined) increased from 84 units to 234 units, an increase of 1.79 times. The number of hand tractors increased from 12 units to 398 units, an increase of 33 times. Combine harvesters were bought and totalled 94 units. Now, there are 1.42 units of large- and medium-size farm tractors per 1,000 mu of cultivated land, 2.65 units of hand tractors, 0.72 units of combine harvesters, 1.1 units of grain threshers and 0.82 farm vehicles per thousand mu of cultivated land. This agricultural machinery provides 153.2 horsepower per 1,000 mu of land. As agricultural machinery greatly increased, the cost of mechanized operation in agricultural production increased 3.15 times.

Although the level of agricultural mechanization increased greatly, the ratio of farming with animal power did not drop too much. Each 1,000 mu of farmland is worked by 20.5 head of large animals. The cost of farming by animals did not decrease, but increased by 77.6 percent. The agricultural labor force did not decrease, but increased by 3,000 persons. This formed "three sets of drums for one show," greatly increasing the cost of agricultural production.

2. Inappropriate Increase of the Multiple Planting Index; Income From Increased Yields Could Not Cover Increases in Production Costs

A comparison of 1979 with 1970 shows that the area of summer food grain crops increased from 41,000 mu to 79,000 mu, an increase of 93 percent. Because of expansion of the area of summer food grain crops, the multiple planting index increased from 143 to 174 percent. Increases in the multiple planting index have a definite effect on increasing total yield, but costs increased and the economic results decreased. The Jiezhuang Brigade of the Taihe Subsidiary Farm, for example, had 1,000 mu of cultivated land; the topography was low, suitable for planting paddy rice but unsuitable for multiple planting of two crops. But the brigade increased the multiple planting index again and again during these years. In 1979, the brigade planted 550 mu of summer food grains, 400 mu of late rice, 120 mu of late corn, and on the basis of the area of cultivated land of the annual average per mu yield was only 667 jin. The cadres and workers of this brigade said: if planting one crop of early rice can produce a per mu yield of 700 to 800 jin, this is higher than the yield of two crops of multiple plantings. Increasing the multiple planting index reduced the yield and increased the cost of production by nearly onefold. In 1979, this brigade's total income from agriculture was 82,500 yuan, but the expenditure of production costs reached 76,700 yuan (not including wages), so production costs constituted 93 percent of the total income and net income was almost nil.

3. Poor Business Management, Serious Waste

For many years, because of the influence of efforts "to settle political accounts, not economic accounts," the situation of production without calculating cost has been serious. The entire farm's production cost was not fixed, and the amount of costs was not strictly scrutinized. The production responsibility system was not established for the basic level production units and individuals. The results of business operations were not closely linked to the material benefits of the individual workers. Materials were blindly purchased, causing accumulation. Management of some materials was chaotic, and loss and damage were serious. Of the 173 units of grain threshers, 84 percent have already been seriously damaged by letting them remain in the wind and rain.

Northern Jiangsu Soil Treatment

Beijing ZHONGGUO NONGKEN [CHINESE AGRICULTURAL RECLAMATION] in Chinese No 1, 24 Jan 81 p 20

[Article by Cai Guangwu [5591 1684 2976]: "In the Coastal Region of Northern Jiangsu; The Main Measure to Improve Saline and Alkaline Soil"]

[Excerpt] The 33 agricultural and forestry farms belonging to the Jiangsu agricultural reclamation system are mostly distributed along the coast in northern Jiangsu. The land has a total area of 2.37 million mu, while at present there are 1.1 million mu of cultivated land. The soil has a heavy saline content, texture is poor, and the content of effective nutrients is low. Before liberation, this area was a saline and alkaline waste beach. The people's life was extremely hard and poor. For the past 30 years, under the correct leadership of the party and the people's government, a firm struggle has been carried out against saline soil. The situation of the saline and alkaline waste beach has been changed, and crops have been planted on many pieces of "barren hardpan land" and "saline and alkaline patches." During the 10 years from 1969 to 1979, the unit yield of food grains averaged an annual increase of 9.5 percent and cotton increased 12.7 percent. In 1979 the scale of increase in the yields of food grains and cotton was the highest. Food grains increased 16 percent. The area of cotton was less than that in 1978 by 20,000 mu, but the total yield still surpassed that of 1978 and the unit yield surpassed 100 jin. While 1980 was a year of major disasters, the yield of summer food grain crops remained at last year's level; the estimated total yield of paddy rice was 164 million jin, an increase of 11 million jin over the previous year; the increase in yield of oil-bearing crops may reach 510,000 jin; cotton will drop slightly in yield, but the average per mu yield may still reach 950,000 jin. The estimated profit may reach 30 million yuan.

The development of production over the last 30 years was mainly due to our gradual understanding of the characteristics of the soil, climate, hydrology, and geology of the locality gained in practice and the activity patterns of the saline content in the soil, and due to our gradual development of comprehensive techniques to improve the saline soil centered around digging trenches, washing away salt and planting green manure.

9296
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NATIONAL

DEVELOPMENT OF FIREWOOD, CHARCOAL FOREST URGED

Beijing GUANGMING RIBAO in Chinese 16 Mar 81 p 1

[Article by "Commentator": "An Important Way of Solving the Rural Energy Problem"]

[Text] As spring returns and our country's millions in the cities and countryside actively participate in tree planting and afforestantion activities, the need to develop forests for firewood and charcoal comes particularly to the fore.

The severe energy shortage in our countryside and the resulting influences and harm have already received widespread attention. There are many ways of solving the rural energy problem; an important and realistic one is energetic development of firewood and charcoal forests.

Every year our country consumes about 200 million cubic meters of wood, of which more than 70 million, or about a third, is used as fuel. Nonetheless many rural areas are still short of firewood, and the situation is particularly grave in the northwest. The grave insufficiency of energy in the countryside not only creates great difficulties for the livelihood of the millions of peasants, but also hinders the development of the agricultural productive forces, results in indiscriminate cutting of forests in some areas, producing ecological imbalances, and is an important factor in the degradation of the people's living environment. Accordingly it is extremely critical that we solve the rural energy problem by every possible means.

How can we solve the rural energy problem? Some people believe that we should ship coal to the countryside, which would solve the rural fuel problem, protect the forest cover and assure that plant stalks were returned to the fields. It cannot be denied that this is feasible in a few areas. But on a national scale, it is impractical to make shipment to coal to the countryside the main method of solving the rural energy problem. If all of the country's peasants used coal for fuel, the annual coal consumption would be 250 million tons, which would be hard to sustain for a relatively long period. Some believe that we should make an energetic effort to set up small hydroelectric stations, popularize methane, and carry out research and testing on the use of solar and wind power and the like. Solving the rural energy problem in this way would indeed be excellent, and in recent years definite results have been obtained in these areas, so that they should continue to be pursued in the future; but in the short term it is impossible for most areas to use these approaches to solve their energy problems. At present our main approach to solving the energy problem must be firewood and charcoal forests.

Firewood and charcoal forests are a renewable energy resource. In general, firewood and charcoal forests grow up within 3 to 5 years after planting. After they have grown, each mu can produce about 1,000 jin of dry firewood each year; even areas with poor conditions can achieve more than 500 jin per mu with rational management. In such areas as Ziyang County, Sichuan Province, Yanling County, Henan Province, and Wendeng County, Shandong Province, many communes used to be short of firewood, but by planting trees and raising firewood and charcoal forests in the "four side areas" (the sides of fields, sides of roads, sides of bodies of water, and edges of villages), in a few years they solved part of the commune members' energy problems with a small expenditure. Considerable experience shows that raising firewood and charcoal forests requires a rather small investment, gives a rather rapid return, and plays a major role in protecting against water and wind erosion, keeping the environment in balance, regulating the local climate and promoting steady, high agricultural yields. There is much latent potential for developing firewood and charcoal forests in this country. The extensive northwest, north China and the northeast, as well as the hill areas of the south, all have suitable conditions for planting of firewood and charcoal forests. The following calculation has been made: our country currently has over a billion mu of waste lands and bare hills which are suitable for forests; if 300 million mu of these areas were planted to firewood and charcoal forests and in addition if use were made of lumber forests, protective forests, sparse woods, shrubs and trees and the "four side areas," the annual production of dry firewood could amount to more than 300 billion jin. Figuring a thousand jin of dry firewood per person per year, this could basically satisfy the firewood needs of 300 million peasants. Obviously the development of firewood and charcoal forests has particularly great importance to our countryside. The people's government organizations and forestry departments at all levels should treat it as a strategic task.

In order to speed up the development of firewood and charcoal forests, in addition to propagandizing them as an important way of solving the rural energy problem in terms of our own country's conditions, we should also do effective ideological education work and help the numerous basic-level rural cadres to understand correctly and deal with the relationship between individual interests and collective and state interests, and between short term and long term interests. Some cadres and some of the masses are not willing to engage in aforestation, and a few people even wantonly cut forests; although there are reasons for this in terms of forestry policy and the system, the situation is also related to laxity in indeological education in these locations. "The person who comes before plants the tree, and the one who comes later enjoys the coolness; the person who comes before has the labor, and the person who comes later the benefit." This has been the great merit of our country's laboring people through the ages, and now in our socialist homeland we should even more energetically bring this good tradition into play. Tree planting and afforestation are effective methods of developing "green energy sources" and solving the problems of agricultural production and the peasants' livelihood and in addition are a farsighted plan for conferring blessings on posterity. Party and youth league members, and especially cadres, must be far-seeing and public spirited, and influence and lead the masses by their own behavior to turn the fair hope of greening our country into a reality.

The development of firewood and charcoal forests is a major matter which affects the vital interests of the millions of peasants, and all localities must start with surveys and research and draw up practicable, concrete plans on the basis of local conditions. A combination of collective and individual afforestation should be used, and in addition to the raising of firewood and charcoal forests by communes, offices, army units, schools and factory and mine enterprises, the localities which are in a position to do so should allocate certain denuded hills, waste lands and barren sandy areas to commune members as private woodlots where they can plant trees and grasses, and give them a free hand to plant, manage and use them as they wish. In locations with large population and limited land, all unused strips of land and the "four side areas" should be used for firewood and charcoal plantings. Forestry scientific research organizations at all levels should conduct scientific research on such forests and select fast-growing, high-yield, high-energy-content trees suited to their particular areas, disseminate advanced management techniques and reforestation techniques, and help the peasants to improve their techniques of cultivating and managing firewood and charcoal forests.

Spring is the golden time for tree planting and afforestation. All localities must take advantage of this opportune time to effectively stir up a new high tide of tree planting and afforestation. We believe that if all the localities will conscientiously implement the CCP Central Committee and State Council "Decision on Central Problems of Preserving Forests and Developing Forestry," intensify their propaganda and education work, and mobilize the enthusiasm of the millions of peasants for growing firewood and charcoal forests, after 10 years or a few decades the extensive rural energy shortage could be altered.

8480
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PRC JOURNAL ON STRENGTHENING AGRICULTURAL PLANNING

HK051607 Beijing JINGJI YANJIU in Chinese No 3, 20 Mar 81 pp 36-40

[Article by Zhang Zhoulai [1728 0719 5490] of agroeconomic faculty of Nanjing Agricultural College: "Some Opinions on Strengthening Agricultural Planning Work"]

[Text] To stress planning guidance in agricultural production is an important task for the speedy development of agriculture. "The decision of problems of speedy development of agriculture by the CCP Central Committee" has pointed out: "Administrative organs at every level should and must give the necessary planning guidance on production and development to the collective economic units in the rural areas." Nevertheless, how should the state strengthen the planning guidance in agricultural production? How is planning guidance to be carried out under the unified command of the state, while safeguarding the autonomy in production of rural collective economic units, and inspiring their initiative? This is an important problem in agricultural planning work that must be solved. According to the demands of our socialist planned economy and the characteristics of the agricultural collective economy, I think the basic question is the gradual reform of the management system in agricultural planning. The present method of fixing agricultural planning targets by directives must be changed to the fixing of targets by the quantity of commodities derived from agricultural production instead. With such changes, agricultural production plans can serve as a pilot target, and such directives should reach only down to the county level; the state purchase plan for agricultural products should be carried out in the rural people's communes, and the planned target for the quantity of commodities derived from agricultural products should be decided through consultation with the communes and brigades. Subsequently a contract of purchase and sales should be signed as well as other economic means and guidance should be given to the collective economic units of the people's communes for rational arrangement of their production, so as to keep their production within the orbit of the state plan. Several points of view on the problem are brought out here for general discussion.

I

Indirect planning is consistent with the characteristics of our country's collective economy.

The agricultural economy of our country includes the rural people's commune economy and the state farm economy, and the people's commune economy is much larger in proportion. The rural people's commune economy is the economy of the collective ownership system of the socialist laboring masses, with the production team as the basic accounting unit. A production team of the people's commune has its own characteristics in comparison to the units under the system of ownership by the whole people. First, a production team is not only an independent accounting unit, but also an operational unit responsible for its own profits and losses. In a production team of a people's commune, the means of production are collectively owned by all the commune members; the operation and management of production are guided by state planning, taking account of the team's objective situation thus motivating commune members to discuss and formulate plans and organize actual production. Products from labor outside the fulfillment of the state tax quota reverts to collective ownership. Products and cash will be appropriately distributed among all members of the team; distribution, retention as well as utilization are to be decided by commune members through discussion; remuneration of commune members' labor must be affected by the success or failure of the team's production in any given year, or the good or bad harvest of an individual year. Income may tend to be high in some years and low in others, unlike the staff and workers under the system of ownership by the whole people who are wage earners, having a fixed level of income guaranteed by the state. At the same time, the means of production required by the production team are also subject to commodity exchange and are acquired from the state or other units, unlike state run enterprises, who are supplied directly by the state. The people's commune is responsible for its own profits and losses in handling production, this very feature clearly manifests the collective ownership nature of its economy, and also determines that its right of ownership and autonomy are solidly protected by the state and that no unit or individual, whatsoever, can exploit or infringe upon its interests. So-called autonomy means to persist in the direction of socialism, to uphold the policy, laws and orders of the state, and in the context of following the guidance of state planning, the basic accounting unit in the people's commune has the right to farm at the convenient time and place, to adopt measures to increase production, to determine the method of management, to distribute its own products and cash, and to resist blind instructions from any leadership organization or individual leader. Under such circumstances, the state should only carry out indirect planning, and must not resort to the method of directly instructing the planning of agricultural production.

Next, agricultural production in our people's communes is now proportionately rather high on self-reliance. This is another important feature in our rural people's commune economy. In the 30 years since liberation, following the completion of the socialist transformation of the system of ownership in our country's agriculture, the agricultural productive forces have gradually developed substantially. Total grain production in our country has increased 1.9 times. However, due to rapid growth of population and the poor technological equipment in agriculture, the majority of our farm work is done manually and the agricultural labor productivity is still very low. Except in the case of some industrial crops and subsidiary farm products, most of the major farm products are barely enough to meet the requirements of the people's communes and commune members' own needs. Exchangeable crops are relatively small in proportion. The ratio of the part of a commodity nature comparatively low, only about 20 percent, and so far we have not got away from the critical situation of finding enough food to feed the 800 million peasants. At the same time, due to low agricultural labor productivity, and lack of clear division of labor, there arises the need for more varieties of subsidiary farm products to supply the rural people's communes and commune members. The need is both for the processing of subsidiary farm products and expansion of reproduction in the collective economy, and for the necessities of food, clothing, housing and fuel which are to be provided to the commune members. There are great differences in our country's regional natural resources, standard of production, transportation facilities, racial characteristics, habits and customs. All these features emphasize the extent of variety and diversification. Some of these necessities may eventually be replaced by industrial products when industry further develops; nevertheless, as long as quality, quantity and retail price of these industrial products, in comparison to the similar, substituted subsidiary farm products, do not come up to the expectation of the commune members, such needs will have to be solved by agriculture itself. The agricultural production of our rural collective economic units is primarily for their own supply, and with the characteristics of such diversity of consumption in their own supplies, it is not necessary for a socialist country to arrange the production of their own supplies within the collective economic units by planning agricultural production. Neither is it possible to encompass in the agricultural production plan, operations to meet the overall demand for consumption of subsidiary farm products by commune members.

All in all, the practice of indirect planning in agriculture under the system of collective ownership of the people's commune, and the approach of deciding procurement targets for production teams should be determined by the characteristics of our agricultural collective economy, and not by the will of the people.

II

The execution of the farm product procurement plan reflects the interrelationship between agriculture and other sectors of our national economy and is in keeping with the demand for overall balance of the national economy.

Agriculture is an important branch of material production in the national economy and has an inseparable link with industry and other sectors of the national economy. Development of the national economy must be based on agriculture, and management of the national economy should be in the order of agriculture, light industry and heavy industry to achieve comprehensive balance. On the one hand, the development of industry and other sectors of the national economy should correspond with the supply of food grains, economic crops and other subsidiary farm products; on the other hand, the development of industry and other branches of the national economy should also meet the demand for capital goods in agriculture and the industrial products for daily necessities in the process of agricultural development and improvement of the peasant's life.

As far as the connection between agriculture and industry and other branches of the national economy is concerned, and in the context of our socialist state where commodity production is in existence, the association of commodity exchange is inevitably manifested. Our agriculture is primarily a collective ownership economy, rural people's commune and its members get their cash by selling their surplus farm products. This cash is mainly used to buy industrial products for daily necessities in the market. The buying potential of agriculture and the countryside, as the important market for light and heavy industry is mainly determined by the quantity of farm products available for selling by collective economic units and commune members.

The basic economic law of socialism has shown us that the purpose of development of socialist production is to satisfy, to the greatest extent, the ever increasing material and cultural needs of society and its members. The most basic and immediate need is consumer materials, food grains among the farm products, meat, eggs and other foodstuff, and light industrial products for daily necessities which are processed from farm products. On the basis of quicker development and high labor productivity in agriculture, the rapid increase of the percentage of commodities in farm produce and the volume exchanged is most significant in ensuring that the needs of society and its members are met.

Therefore, in the comprehensive balance of the national economy, the most important aspect in dealing with the relative ratio between agriculture and industry and other branches of the national economy is: On the one hand, the speed and scale of development in industry and other branches of the national economy should be correctly determined according to the available quantity of agricultural commodities produced; and on the other hand, cash receipts of the collective economy and commune members from the sales of farm products should be used as the basis to correctly calculate the percentage of cash receipts available for the purchase of industrial goods (including means of production and means of subsistence), which equates to the amount of purchasing power, and thereby rationally organize the production and supply of industrial commodities. (The cash amount used in the purchase of industrial subsidiary products by commune and brigade run industry, and commune members' income from labor. As this is not directly relevant to this discussion, no reference is therefore made.) One of the major phenomena of the so-called disproportionate national economy is that the development of industry and other branches of the national economy exceeds the quantity of agricultural commodities produced with the result that foodstuffs, meat and eggs are in short supply, and raw materials produced by agriculture for mills and factories are also in short supply; the underproduction of industrial commodities leads to a market situation in which demand exceeds supply. In a normal year, farm products within the collective economic unit of the people's commune and for the supply of commune members' own consumption, are being properly determined on the overall considerations of fulfillment of the state procurement plan, development of production, increase in collective savings and improvement of livelihood necessities of commune members; such considerations are based on the correct treatment of the state, the collectives and individual commune members and their triangular relationship. Though such farm products are calculated as income and for distribution to commune members, but the product itself does not come within the purview of exchangeable commodity, and is not in any way related to other branches of the national economy, and therefore is not incorporated in the comprehensive balance. And within the comprehensive balance the state's investment in various agricultural projects is mainly based on the capability of state finance, to be decided by the national budget and the balance of revenue and expenditure outside the national budget; this has no direct relationship to the kind of system adopted in agricultural planning. Therefore, the adoption of the farm product procurement plan would have no unfavorable effect whatsoever on the comprehensive balance of the national economy. On the contrary, the comprehensive balance would be able to more directly and accurately gauge the equilibrium related to materials and cash between agriculture and other branches of the national economy, and greatly simplify the work of comprehensive balance; at the same time it can more conveniently carry out the policy of gradually diminishing the "scissors difference" between the prices of industrial and agricultural products; in practical terms, it can more timely and accurately assess the actual benefit for peasants after the procurement price for subsidiary agricultural products has been raised.

III

The adoption of a farm product procurement plan would definitely protect the autonomy in production of the rural collective economic units, inspire their initiative to implement the principle of acting in accordance with local conditions.

Agricultural production deals, with living animals and plants, which follow their own rules in breeding, nurture and growth, and are very closely linked to natural conditions; the whole process of agricultural production is the harmony of the two major factors of biology and the environment. Marx said: "The process of economic reproduction, irrespective of its social characteristics, is always interwoven with nature's process of reproduction within this department (agriculture)."* This important feature of agricultural production requires the leadership to keep to the principle of acting in accordance with local conditions. It is therefore required to rationalize the planting of crops according to the natural conditions of the locality, the type of cultivation and the lèvel of productivity, maximize the advantages and minimize the disadvantages; different plans and measures should be compared and a choice made. To really achieve this, one should rely on the broad masses and the cadres of the people's commune. Only they have intimate knowledge about the local natural resources, and cultivation of different crops and the characteristics of their growth. In terms of production, they are the most eligible speakers, Our country is a large country with complex geographical and climatic conditions. The natural conditions of different regions differ enormously. It is essential that the leadership responsible for agricultural production should take note of this in order to gain ideal economic benefits.

The agricultural production of our country, in a very long period, has been performed according to the whims of officials and by administrative orders from the top to the lower echelons of the people's commune: through this process, a plan for agriculture was made. This method makes compulsory decisions on what crops to cultivate, how much to cultivate and even how to increase production. Practical experience has proved that such an approach is detrimental to the development of agricultural production. There were, in the past, certain regions where areas for double-cropping of rice were compulsorily assigned, regardless of nature and objective economic conditions, and the three-harvest system was popularized across-the-board. Take the instance of Wujin County, Jiangsu Province where double-cropped rice acreage was blindly increased from 24 percent to 60 percent of the total acreage. The result was, due to the inability to keep pace with the seasons, labor and manure, food grain production fell from 1.34 billion jin in 1966 to 1.094 billion jin in 1977. For a period of 11 years, production fluctuated for 3 years and fell for 8 years. By 1978, the county had learnt its lesson, and on consideration of the practical conditions adopted principle of acting in accordance with local conditions. The double-cropped rice acreage was cut back from 710,000 mu to 390,000 mu, which was 30 percent of the total rice cultivation; with such a cutback, the grain yield on the contrary increased to 1.538 billion jin.* This example has amply manifested that agricultural production follows its own natural laws. What crops are to be planted in an area, in a production unit, and what kind of cultivation system is to be adopted. All this has to be worked out in a practical production plan through mass discussion, and should suit local conditions, so that better economic results can be achieved. In the past several years, the losses suffered in agricultural production in certain areas can be attributed to the work style of the leadership; problems in agricultural planning may also be connected with it. Subjectivism and executive decrees are bound to harm the development of agricultural production; the practice of issuing direct orders for the production targets of rural people's communes also boosts the malpractice of issuing coercive orders and decrees at random. "The decision of the CCP Central Committee on the problem of speeding up the development of agriculture" pointed out: "Our leadership over agriculture must proceed from reality, and must be run in accordance with the law of nature and the law of economics, and in accordance with the interests of the masses, it must uphold the principle of democratic running of communes and respect and safeguard the democratic rights of the masses of commune members, and certainly cannot abuse administrative decrees, issue harmful directives and adopt a "cutting with one knife" solution without any regard to the complexities of the situation. In the planning of agriculture the adoption of a procurement plan for farm goods would help to meet these requirements.

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* "Das Kapital," People's Publishing House, 1975 Edition, Vol 2, pp 398-399.

As such, in the arrangement of agricultural planning, starting from the need for agricultural products for the development of the national economy, and in the light of the level of productivity of farm products in different regions and units over the years, and in consideration of the national layout of agricultural production, and taking the triangular interests of the state, the collective and the commune member into mind, the state could decree on the basis of individual regions, the procurement quota for farm products such as grain, cotton, sesame, silk, tea, sugar, vegetables, tobacco, fruit, herbs and other sundries. As long as the fulfillment of the state procurement plan is ensured, the basic accountable unit of the people's commune can make its own arrangements to solve its own internal needs, including the need for farm products required for expansion of reproduction, and the livelihood necessities of commune members. Such practice would allow the production team greater autonomy in production, and benefit the realization acting in accordance with local conditions. In reality, such an approach is also feasible. Because: On the one hand, the production team needs to sell its commodity farm products in return for cash to be distributed among the commune members, and to purchase materials for production; and on the other hand, for the sake of national economic development, strengthening the worker-peasant alliance, and a closer rural and urban relationship, the state also needs to procure farm products. Such a method must ensure the procurement through the signing of sales and purchase contracts, making use of procurement prices, the supply of materials for agricultural production, offering credit, incentive selling and other economic means, so as to impose control. As long as prices are reasonable, the method of commodity exchange through trading is also acceptable to the commune members. Reality has proved that in 1979, after the state had given a big boost to the procurement prices of farm and subsidiary products and offered additional rice for sales in excess of the quota, the total amount of procurement of farm and subsidiary products for the whole country rose by 27.6 percent over the figure for 1978, even deducting the factor of the inflated price, the actual growth amounted to 4.5 percent.

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* See "A Discussion on the Problems of System of Cultivation," "Guangming Ribao," 31 Mar 1979.

IV

The adoption of farm and subsidiary product procurement plans by the basic accountable unit of the rural people's commune is a major reform of the present agricultural planning system. Leading comrades had already propagated it over 10 years ago, and many comrades are deliberating on this question at the moment, besides, more and more people are coming round to the idea; however it is not easy to put it into practice. On the one hand, no reform can be completed overnight, and the other reason is the obscurity of the dividing line between right and wrong. Some comrades fear that such reform could be taken as forsaking the socialist planned economy. The question warrants a conclusive discussion based on theory and in conjunction with practice.

A socialist planned economy means that in the light of the requirements of objective economic laws such as the fundamental economic law of socialism, the law of planned and proportionate development of the national economy and the law of value, the state is to coordinate in planning the pace and proportion of development in agriculture, light industry, heavy industry and other branches of the national economy, and to work for the realization of planned and quick development of the national economy. The plan is the means by which the economy of a socialist state is managed. The aim of planning and the carrying out of a planned economy is to satisfy, to the greatest extent, the ever increasing material and cultural needs of society. The adoption of a planned economy by a socialist state is an important manifestation of the superiority of the socialist system.

Taking stock of the practical experience of economic construction of our country since liberation, it could be said that basically, our country represents and protects the interests of the whole people but that does not imply that the plan formulated by the state can justifiably reflect the requirements of the objective economic laws and completely coincide with the interests of the masses of laborers at all times. At the present juncture in particular, two forms of ownership, the system of ownership by the whole people and the system of collective ownership are still in existence in our country. In the collective ownership economy, the state can only pursue indirect planning, resort to commodity exchange, the law of value, price, credits, sales and purchase contracts, incentive selling and the similar economic policies and economic measures, and indirectly guide its production along the lines of the need of state planning; a far cry from the way of dealing with the economy of ownership by the whole people, whereby, the state directly decrees the planning. In view of our rather low level of productivity at the present moment, and wide differences still in existence between the physical and technological conditions and the extent of socialization in production within enterprises, the maturity of public ownership requires a process of continuous growth and continuous upgrading, therefore, in dealing with enterprises under the system of ownership by the whole people, a certain amount of autonomy is given to the production plan; a recognition that differences of economic interests exist in an enterprise. Our dealing with the socialist planned economy, therefore must not be in the sense that the economic activities of all enterprises should be stipulated by the state or the higher administrative departments, or acceptance of only the uniformity of state planning, and denying the production unit the right to retain a certain degree of independence and flexibility under the unified command of the state plan.

Erroneous ideas about the socialist planned economy confuse the distinction between socialism and capitalism, resulting in the recurrence of the situation of earlier years in the sphere of production such as: It is only necessary to plant according to the planned directives of the higher authorities regardless of whether they were harmful directives in contravention of natural and economic laws; this was taken to be socialism; on the other hand, teams that complied with the interests of society were labelled "free cultivators," "capitalists" and criticized, because their planting was based on the merits of local conditions and on proper timing. Due to this, agricultural production was severely jeopardized. This is a most profound lesson.

The evaluation of the rationale of a planning system is much the same as the evaluation of production relations, the only criterion is whether the system stimulates the growth of productivity. As long as the system promotes productivity, the credibility of the emergence and existence of the system must be affirmed. An agricultural planning system dominated by a farm product procurement plan should fit in well with the features of the agricultural economy and agricultural production of our country, and facilitate the strengthening of agricultural planning and the state leadership for agriculture, and be beneficial to the proper handling of the triangular relations of interest of the state, the collective and the commune member, and aid mobilization of socialist fervour among the broad masses of cadres. The agricultural planning system therefore should be affirmed and favourable conditions be created for its active promotion.

Since the change from an agricultural planning system to a farm product procurement plan, the state agricultural production plan in the main, should draw up mid and long term projects for the development of agriculture. Based on the regional agricultural plan and the needs of the state for the creation of commodity grain bases and industrial crops bases, the state should draw up various agricultural development plans and envisage measures for realization of the plans. In order to ensure the fulfillment of the procurement quotas for farm products, the state may, based on the mid and long term projects, set up pilot targets for production of major farm goods. The target directive should reach down to the county level. The county will be responsible for working out an average between the pilot target being decreed by the state and the production plan submitted by the commune and the teams. Should major discrepancies be found, the interests of the state, the collective and the commune member are to be safeguarded. According to need and feasibility, adjustments through consultation with the communes and brigades can be made, the pilot target set up by the state may also be revised, so that unanimity is reached between the principals and subordinates. The state plan must be coordinated with the plans of the communes and brigades, and planned guidance by the state must be combined with respect for the autonomy of the communes and brigades.

(Revised and updated in December 1980)

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PRC ECONOMIC JOURNAL ON FORESTRY, ECOLOGY

HK260506 Beijing JINGJI YANJIU in Chinese No 3, 20 Mar 81 pp 41-45, 58

[Article by Huang Yongshi [7806 3057 6524] of the economics department of Wuhan University: "Expand Forestry and Maintain Ecological Balance"]

[Text] Land is a condition of subsistence and reproduction for humanity which has been passed on from generation to generation and cannot be replaced. In the broader sense of agriculture, land plays its role as a tool of production. All tools of production, such as machinery, will wear out with protracted use. It is different with land which, //"if handled properly, can be constantly improved."//[1] [slantlines denote boldface type] The mountain areas in our country account for two-thirds of the total land area. How such a vast area of land resources should be managed and utilized is an important problem that should be studied conscientiously in our modernization of agriculture. There is no harm in supposing that the agriculture of our country cannot be considered as having realized all-round modernization if, after a certain period of modernization construction, there is a fairly big increase in the modern means of production, but vast areas of our country are still barren, soil erosion remains the same as before. The Huang He is still a famous "destructive river" in the world and even the Changjiang has turned into a "second Huang He." At the same time, forests are also the greatest ecosystem. Without forests in our mountain areas or if the forests are destroyed, it will be impossible to maintain ecological balance in nature and soil erosion and weather imbalance will result which affect agriculture and animal husbandry as well as the development of the overall national economy. On top of that, the production cycle of a forest is long. Marx noticed this problem and pointed out, "It takes 10 to 40 years or even longer to finish a cycle."[2] The cultivation and building of forests cannot be accomplished overnight. We should, therefore, attach great importance to mountain areas and ecological balance and, with the attitude of being responsible to our children and grandchildren, seize the opportunity and strengthen forest building.

I

Ours is a mountainous country with hilly areas making up 33 percent, highlands 26 percent, hills 10 percent, basins 19 percent and plains 12 percent of the total area of 9.6 million square kilometers. What we generally call mountain areas, consisting of hilly areas, hills and the fairly rugged highlands, account for about two-thirds of the total area. More than half of the counties throughout the country are situated in hilly or semihilly areas with some of the provinces and districts covered by 70 or 80 percent of hills (hilly areas accounting for 70 or 80 percent). Our country being situated in temperate, subtropical and tropical zones and close to the Pacific Ocean, there is an abundance of rainfall over a vast area. It is rather dry in the northwest, but the water from melting snow in the high mountains and the groundwater are enough for irrigation. Under such natural conditions, our country's forest reserves have been rich in history. To this day, there still exist large areas of primeval forests in Da Hinggan Ling and Xiao Hinggan Ling in the northeast, and Altay Shan and Tian Shan in the northwest. Even in the border and hinterland of the Takla Makan desert, the biggest desert in our country, grow luxuriously close to 5 million mu of natural diversiform-leaved poplar forests. Fujian and Taiwan in the southeast are very rich in forest reserves, and so is the southwest. Generally speaking, there are different acreages of forest reserves in other provinces and areas. But in past dynasties, the forests in our country have suffered great damage. The existing forests in our country have suffered great damage. The existing forests in our country mentioned above have one factor in common, that is, they are situated in remote and out-of-the-way areas. That is why they can survive to this day. Conversely, where they are not situated in remote areas, most of them have been destroyed. The reason why it is bare is that it is a big city. Damage to forests and soil erosion are most serious in the provinces along the Huang He valley, especially in the gully area of loess hills centered round northern Shanxi which, in the past 3,000 years and more, has always been the heart of political, economic, military and cultural activities in our country. In ancient times, the forests and grass in this area were dense and thick and the water of the Huang He was clear. "Weifeng: Lumbering sandalwood" in "The Book of Songs" says, "fell sandalwood trees and place them in midstream which is clear and ripples." At that time there was vegetation such as sandalwood whose crowns, during thunderstorms, served to intercept from above and there were bushes, withered twigs and fallen leaves to contain the water below, thus rain water was unlikely to wash away silt directly; and during the gale seasons, it was possible to reduce wind velocity and weaken wind force because of towering forests and the protection of vegetation. This not only prevented sand and soil from being blown away, but also reduced evaporation of topsoil and thus conserved water and soil. At that time, there was a balance in natural ecology and so the water in the river was clear. However, the feudal ruling class of past ages in our country lived in the seclusion of their homes. Knowing only how to live in luxury and extravagance, they went in for large-scale construction as they pleased, built palaces and towers, and caused great damage to the forests. In the most famous palaces in history such as the Afang Palace in the Qin Dynasty, there was a tower at every 5 paces and a pavilion at every 10. The palaces started to be built in the 35th year of Qin Shihuang but was not finished when the Qin Dynasty was overthrown. When Xiangyu entered the central plain, he set fire to the palace and the fire did not die out for 3 months. In the 7th year of Han Gaozhu, Xiao He again built Weiyang Palace with a circumference of 28 li and 30-odd halls and pavilions. Such was the disdain with which feudal rulers of the past dynasties treated the financial resources of the people and recklessly wasted things. This was one of the reasons why forests were greatly damaged in our history and the ecology gradually lost its balance. At the same time, the Huang He valley has always been the key area of our country's military activities for 3500 to 3600 years since the Shang and Zhou dynasties. Changes of dynasties, the establishment of separatist regimes by military governors, struggles among the upper members of fraternal nationalities, fights among rivals for the throne and frequent wars, all these have also done serious damage to the forests. Besides, for a long time our country was under a feudal society and the main production activity was agriculture. As there was very heavy feudal exploitation, rice was as precious as pearls and firewood as costly as cassia. The only way out was to destroy forests and open up wasteland. For thousands of years, there was only destruction of forests and no cultivation, and natural resources were all but exhausted. Owing to the various reasons cited above, our forest areas amounted to only 8 percent of the total land area of the country by the time of liberation and became one of the countries in the world with the least forests. Forest cover was lower by one half than the world average level and per capita forest area was only 2 mu. The fact that ecological balance has been seriously damaged does not suit the needs of the construction of the national economy nor the people's environmental needs.

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[1] Marx: "Das Kapital," Vol 3, People's Publishing House, 1975 edition, p 880.

[2] Ibid., Vol 2, p 272.

II

Since the founding of the PRC, we have adopted some measures, such as planting trees and growing grass, afforesting barren hills and planting various kinds of windbreak forests, thus raising the forest cover from 8 percent to 12.7 percent. However, it should be said that we have not sufficiently understood the great significance of this work, especially its great role in the maintenance of good ecological balance in agriculture and the achievements have not been remarkable. During the 10 years of calamity, some localities felled trees indiscriminately and serious damage was done to forests in reclaiming wasteland and, on top of that, some forestry departments not only regarded felling as more important than planting but went so far as to do the felling only without doing any planting, with the result that the forest reserves and ecological balance were again seriously damaged. Take the forest region in Daxinganling forestry area for example. Since 1968, forests destroyed in reclaiming wasteland or felled indiscriminately have amounted to several hundred thousand mu, those destroyed by fire have amounted to 15 million mu or so and timber consumed as fuel by local residents, offices and units has totalled 2 million cubic meters and more every year. Forestry work departments have felled big areas of trees but planted small areas of them. All this has resulted in the forest reserves suffering damage and the ecology losing its balance, reduced rainfall and increased wind velocity, which has not only affected local production in agriculture and animal husbandry, but also threatens the survival of the Hulunbuir grassland. The area of tropical natural forest in Hainan Island has also been reduced from 12.95 million mu in the early postliberation period to 3.67 million mu at present and the forest cover has dropped from 25.7 percent to 7.2 percent.

Many countries in the world have gone through the path from destroying forests to restoring them. Somce countries such as Sweden and Finland have restored their forests after long term efforts. At present, forest cover in Sweden is 57 percent, in Finland, 61 percent and in the United States 34 percent. The United States used to fell trees without bothering to plant them, which not only destroyed forest reserves but also caused serious soil erosion. They drew lessons from this and, particularly in recent years when they have become aware that they cannot meet the needs for timber in economic development, also speeded up artificial afforestation.

In the history of our country, our forests have suffered serious damage and the ecology has suffered severe loss of balance. Since the focal point in national work was shifted to socialist modernization, the State Council has decided to carry out the project of building a forest shelter system in the "three norths"--the northwest, the northern part of north China and the western part of the northeast. Our country has also promulgated the "forest law," which will undoubtedly exert tremendous influence on speeding up the development of afforestation, the restoration of ecological balance and ensure production in agriculture and animal husbandry.

The "forest law" stipulates that forest cover throughout the country should generally reach 30 percent...Counties in mountainous regions should generally reach 40 percent and more, counties in hilly areas should generally reach 20 percent and more and counties in plain areas should generally reach 10 percent and more. It has been studied that there can be fairly good ecological balance, regulation of weather and reduction or prevention of soil erosion if forest cover in the country reaches 30 percent and if the forests are distributed evenly. Many provinces, districts and counties in our country are situated in mountainous or semimountainous areas. They should develop afforestation vigorously. It is entirely feasible for the counties in mountainous areas to achieve 40 percent and more in forest cover. In accordance with the local specific conditions, some mountainous areas can also gradually achieve 50 percent and more, or even 60 percent and more. For instance, in Lingxian County at the western foot of Jinggangshan where there is "90 percent hills, 5 percent water and 5 percent fields," hilly areas account for 90 percent of the total area. After the downfall of the "gang of four," the county party committee led the cadres and people in going up the mountains to plant trees and the forest cover has now reached 89 percent of the total hilly area in this county.

However, we should take into account both necessity and possibility when drawing up a plan or formulating policy. When vigorously developing afforestation, we should proceed from reality and should see that the development of forestry takes time. The production cycle of a forest is long and it is therefore necessary to combine long term interests with immediate ones. To achieve this aim, it is first of all necessary to combine the long and the short in forestry. For example, the production cycle of timber woods is often as long as 10 years, or scores of years and, to combine with this, it is necessary, according to local conditions, to plant at the same time such economic forests as fruit trees and woody oil-bearing plants, which will bear fruit in a few years' time, and we will thus be able to have gains every year. Second, there is also a question of combining long term interests with short term ones in forestry and animal husbandry. Generally speaking, the production cycle of the latter is shorter than that of the former and, therefore, grass can be grown on gentle mountain slopes and hills in order to develop animal husbandry. Third, with the exception of fields on steep slopes which can easily result in soil erosion and should be given up for the restoration of animal husbandry, the existing cultivated land should continue to be tilled and tilled well in order to meet the needs of the local people for grain and other cash crops.

The woods and grass on hills can control soil erosion and prevent drought and waterlogging. At the same time, with the development of animal husbandry, more high quality organic fertilizer can be applied to the farmland and, in addition to other measures for increasing production, such as improvement of seeds and prevention of plant diseases and insect pests, per unit area yield of the farmland will inevitably be raised gradually. Following the rise in per unit area yield of such field crops as grain, some farmland can also be given up for the restoration of forestry and animal husbandry and, following further development of forestry, various kinds of processing industries related to forestry can also be established. In this way, both communes and brigades in mountainous areas, though their main task is forestry, can likewise achieve an all-round development in agriculture, forestry, animal husbandry sideline occupations (industry) and fishery and contribute to the realization of the four modernizations.

The gullies in loess hills are areas in our country where ecological balance has been seriously damaged. To develop forestry and conserve water and soil is a fundamental measure in changing the face of these areas.

The loess plateaus in our country, the biggest loess area in the world, cover an area of 580,000 square kilometers, 430,000 square kilometers of which are soil erosion areas, most of them being in the middle reaches of the Huang He. Soil erosion is especially serious in an area of some 200,000 square kilometers which, centered around northern Shaanxi, includes western Shanxi, southern Nei Monggol, eastern Gansu and southeastern Ningxia, forming a gully area in loess hills with broken terrain and crisscross gullies. For thousands of years, this area has been stripped of vegetation, the ecology has lost its balance and the soil eroded. Once it rains and there are thunderstorms, the result is surface runoff, the silt is washed away, and both water and soil are lost. Not only is the weather in this area dry, the soil poor, and the production level in agriculture as well as the people's living standard low, but also it causes serious and frequent floods and waterlogging in the vast plains of Hebei, Shandong and Henan provinces in the lower reaches. Looking back on history, one can see that the Huang He is the source of the longstanding Chinese civilization. The reason why it has become a "destructive river" is that people improperly handled the land on both sides of the middle reaches and its tributaries, destroyed vegetation and violated the natural law of ecological balance.

The destruction of forests in the middle reaches of the Huang He brought with it a large amount of silt. A particularly large amount of silt is carried by such tributaries as the Wuding He, the Yan He, the Luo He and the Jing He in northern Shaanxi. We have had a set phrase "as different as the waters of the Jing He and the Wei He" in our country since ancient times. The "Shih Chi" [historical records] even definitely records, "there are several dou of silt in 1 hu of the Jing He's water." Thus we can see the great quantity of silt in the Jing He. In the early 5th century, the Wuding He was still called the "clear stream" but, following many years' destruction of forests and the development of ecological imbalance, it is calculated now that 300 million tons of silt is conveyed annually to the Huang He by the Wuding He along. In addition to this, there is also no small amount of silt flowing into the Huang He annually from the east bank of the Yellow River, that is, the gully area of loess hills in northwest Shanxi. According to statistics, the average loss of silt annually exceeded 10,000 tons per square kilometer during the 10 years before 1971, that is to say, 7 tons of silt was lost per mu.

According to investigations by the units concerned, the total area of gullies in the loess hills in 4.5 billion mu and more, of which more than 200 million mu are barren hills and wasteland and more than 100 million mu are existing cultivated land. With a population of more than 24 million, there is an average of about 4 mu of cultivated land for every person, which is more than twice as much as the average of 1.9 mu per person nationally and 3 to 4 times or even 7 to 8 times more than the per capita cultivated land in many areas of the south. However, because of destruction of vegetation, there is serious soil erosion and ecological imbalance which damages the environmental conditions for agricultural production. As a result, the more it is cultivated the poorer the land becomes and per mu yield in many places is only about 50 jin. In order to restore ecological balance in this area and provide good environmental conditions for the production in agriculture and animal husbandry, the state should clearly stipulate that the gully areas in loess hills are water and soil conservation areas. This will not only serve the long term interests of the 20-odd million people in the area but also serve the long term interests of hundreds of millions of people in Hebei, Shandong and Henan provinces in the lower reaches of the Huang He and should be regarded as key national construction projects. From the long term strategic point of view, production in this area should be shifted to the main task of forestry and animal husbandry in order to attain this aim. However, it should also be noticed that for a certain period of time it will still be impossible to provide any timber or forest products and will also be impossible to provide a lot of livestock products for the next 3 to 5 years. It is therefore necessary to pay close attention to afforestation, conserve water and soil and regard them as an overriding capital construction task in this area and as a great socialist undertaking. At the same time, with the exception of cultivated land on excessively steep slopes which should first be given up for the restoration of forests and forage grass, it is still necessary to concentrate manpower and material resources on the existing cultivated land of more than 100 million mu for the production of grain and other crops and to strive to gain self-sufficiency in grain. With the rise in the per unit grain yield, the acreage under cultivation can gradually be reduced for the restoration of forests and forage grass. The existing 200 million mu or more of barren hills and wasteland should all be promptly afforested, step by step and in a planned way, in order to develop forestry and animal husbandry. Afforestation is a biological measure and a fundamental policy for the conservation of water and soil. Practice in many places has proved that it is difficult to prevent soil erosion if only engineering measures have been taken to the exclusion of biological measures. It will be difficult to protect a dam in a gully if attention has been paid only to the maintenance of the dam without planting trees and growing grass. Situated by the Wuding He, Peiyuan gully in Shuide County paid attention to the construction of terraced fields and was once an advanced unit in the loess plateau 20 years ago. However, they did not pay attention to afforestation. As a result, the big dam of Peiyuan gully and its "Changjiang fields" were washed away overnight in two torrential rains of 150 mm in July 1977. Conversely, Nuanhong gully and Chenjia gully--the other two gullies situated in the same Shuide County attached great importance to planting trees and cultivating grass while building dams and opening up fields and their forest cover amounted to 32 and 41 percent of their respective drainage areas. Under the same conditions of 150 mm of rain in 2 hours in July 1977, there was very little soil erosion, the four dams were safe and sound and their per mu output of gaoliang that year came to 500-odd jin. By the same reason, when building water conservancy work in the Huang He, we should also pay attention to afforestation on both banks of the main stream and its tributaries in order to prevent soil erosion. Otherwise, under the conditions of ecological imbalance, the water conservancy work will burst or be choked with silt. Viewed from the construction of the Sanmenxia reservoir project, the amount of silt in the Huang He has been increasing in recent years because afforestation work has not been grasped in good time in the vast drainage area of the main stream and the tributaries in the middle reaches of the Huang He. The state of a vicious circle of ecological imbalance has not been fundamentally changed and soil erosion is serious. According to surveys, the amount of silt passing through Sanmenxia in the early postliberation period was about 1.3 billion tons annually, but it has now increased to 1.6 billion tons. As a result, the reservoir has become a "silt storehouse," unable to play its proper role. It will not take many years before the Sanmenxia reservoir is silted up if we do not carry out afforestation vigorously in the gully area of loess hills, change the siutation of ecological imbalance and do a good job of water and soil conservation work.

According to investigations, the problem of the Changjiang is also very serious. Statistics in the last few years show that, owing to damage of forests and soil erosion, the total eroded soil in the Changjiang valley amounts to some 2.4 billion tons annually. According to estimates by the departments concerned, the silt washed away throughout the country is at least 5 billion tons annually or a 1 cm layer of topsoil is washed away annually from cultivated land throughout the country. Scientific studies at home and abroad show that a few inches of topsoil is very important for the development of crop production and the maintenance of human life. It is a very serious problem that 1 cm of topsoil should be washed away annually from cultivated land throughout the country. Although it is possible to restore the topsoil washed away, the process is extremely slow. According to studies conducted by foreign scientists, it takes 500 to 1,000 years to restore about 1 inch (equal to 2.54 cm) of topsoil. Thus it can be seen that not only the Huang He valley, especially the gully areas in loess hills, should be afforested vigorously and promptly, the work of conserving water and soil should also be strengthened in the Changjiang valley and other parts of the country from Heilongjiang in the north to Hainan Island in the south. First of all, it is necessary to protect the existing forest reserves, to strictly prohibit indiscriminate felling and cutting, correct the erroneous tendencies of regarding felling as more important than planting, prevent bush fires and reform the backward habit of "cutting ashes" (in the rural area of Enshi, Hubei Province, bushes and weeds on the slopes are cut every year before sowing, burned into ashes and used as fertilizer, hence "cutting ashes.") At the same time, it is necessary to plant new forests actively, including timber forests, economic forests, forests for firewood and charcoal and so on, fundamentally change the situation in which the ecological balance over a vast area of the country has been damaged and provide good environmental conditions for the all-round development of our country's agricultural production. According to the experience gained by our laboring people during long years of transforming mountains and taming rivers, it is necessary to adopt the principle of "from top to bottom" in afforestation and conservation of water and soil, starting from the top of mountain ridges and then dealing with the slopes and ditches. One mountain top transformed means one less to be eroded.

III

To develop forestry is of great significance to the maintenance of ecological balance in agriculture and to the speedy development of agricultural production.

In order to do a good job of forestry, the following aspects of the problem should be solved conscientiously under the leadership of the party:

1. To fully arouse the enthusiasm of the broad masses for afforestation is a prerequisite for the development of forestry while to clearly define the ownership of mountain forests and trees, make clear the rights and responsibilities of the three parties, that is, the state, the collective and the individual and give consideration to the interests of all parties plays a very important role in mobilizing the enthusiasm of the broad masses. It is imperative, therefore, in accordance with the "forest law" and the spirit of the instructions of the Party Central Committee and the State Council dated March 5, 1980, to carry out earnestly the policy that thone trees planted by the state belong to the state, those planted by the communes belong to the communes, those planted by the production teams belong to the production teams and those planted by the commune members in front of or in back of their houses or in places designated by the production teams belong to the commune members personally. State owned barren hills and wasteland near the communes and production teams which the state is not in a position to manage can be planted with trees by the communes and production teams, with ownership of the land remaining unchanged but the forests and trees belonging to the communes and production teams. But to open up wasteland for the purpose of growing crops or to use it for other purposes is prohibited to avoid soil erosion. It is also permissible to implement the method of planting trees cooperatively between the state and the communes and to share the [word indistinct] between state-owned forest and those of communes and brigades, or between the mountainous areas of one commune or brigade and another, it should be settled by both parties through consultation and defined clearly under the leadership of the party to avoid the occurrence of land disputes and dampening the enthusiasm of the masses for afforestation.

2. To fell and to plant are two aspects which condition each other and complement each other. To plant trees is for the purpose of felling them, but only by doing a good job of planting can an abundant basis be provided for felling. Our country is now poor in forest reserves and the forest cover is low. Under these circumstances, planting trees should even be placed in the most important position in forestry production. Therefore, in order to develop forestry, the policy of felling and planting trees simultaneously and of making planting the basis should be implemented. Only in this way can we realize Premier Zhou's instructions before his death, "the more we fell, the more and the better we have. The green hills are always there for our use forever." From now on, the wrong tendencies of regarding felling as more important than planting in forestry departments should be checked in earnest in order to protect the existing forest reserves and build new forests vigorously. It is necessary to assign simultaneously the tasks of cultivating and felling and make these two the basis for checking the achievements in managing forestry enterprises.

3. Price policy plays an important role in regulating production. Reasonable prices can promote production; converseely, they can hinder the development of production. When fixing purchase prices for timber and forest by-products, it is important to consider the interests of the three parties, that is, the state, the collective and the individual. One of the reasons why afforestation plans have not been fulfilled and timber forests have not been able to develop in recent years is that the mountain price is rather low. At present, the mountain price for timber

is only 4 to 7 yuan per cubic meter in some places and, when felled and sold to the state, the timber fetches only 28 yuan. The masses are of the opinion that it is better to sell chopped wood than sell timber in such a way to the state and it is more profitable to let the hills grow with all sundry woods than to plant timber forests. To solve this problem, the departments concerned should, in accordance with the needs of economic law, adjust the purchase prices for some forest products and thus ensure the fulfillment of the state plan. Similarly, on the question of purchasing fruit and other forest by-products, state owned commercial departments should also, in accordance with the state price policy, strictly implement the policy of negotiating the price according to quality and giving the best price for the best quality goods. Under no circumstances should they hold down grades, force down prices and dampen the production enthusiasm of fruit peasants. As some fruit is liable to rot, it is all the more necessary to actively arrange an outlet for it and deliver it on time to avoid causing losses. To sign contracts in advance between production and selling units and between localities and to deliver or receive goods on schedule according to the stated quality and quantity is an effective measure to ensure the balance between supply and demand and ensure equality and mutual benefits. Both parties should uphold the solemnity of the contract and should, under no circumstances, be allowed to fail to carry out the stipulations in the contract one-sidedly or scrap the contract at will. Otherwise, compensation for losses should be paid according to law.

4. To afforest hill locks and wasteland is an objective which we must make efforts to attain. But it is also a very real problem to ensure the need for grain in the localities. In order to handle this contradiction correctly, it is necessary, in the course of planting forests and growing forage grass, to make overall plans and take all factors into consideration and solve well the grain ration problem of the commune members. The work of abandoning some fields on slopes for the restoration of forests and forage grass should be carried out step by step. While efforts are being made to raise the grain yield per unit area, sloping fields can gradually be abandoned and afforested. When some steep slopes should urgently be abandoned but the yield per unit area has not been raised, it is feasible to adjust state purchase quotas properly according to actual conditions in order to reduce the burden of the peasants. If necessary, part of the grain can be allocated and transported from nearby grain-producing areas to ensure that the grain ration of the commune members in forest regions is not less than that of commune members in nearby grain-producing areas.

5. Burning firewood is an important practical problem in people's life. In autumn, when leaves turn yellow and fall, residents near the forest region often go to the hills in groups and rake up withered twigs and dead leaves for fuel. This greatly affects the maintenance and restoration of the natural ecological balance. The layer of withered twigs and dead leaves under the forests plays a tremendous role in conserving water resources in the forests, maintaining soil fertility (humus) and thus maintaining ecological balance. Residents near forest regions should therefore be dissuaded from raking up withered twigs and dead leaves under the forests. The people's needs for fuel in daily life should be solved and every possible means should be tried, such as planting firewood and charcoal forests, mining coal vigorously where there is a coal mine, developing methane-generating pits vigorously and exploiting solar energy. In the forest regions of our countryside, there are a lot of effective measures which should be investigated and studied by the masses and promoted vigorously. The question of burning firewood in these regions should be solved well to create conditions for the development of afforestation, forest protection and the maintenance of ecological balance.

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MEASURES TO CONTROL CEREAL SMUT DESCRIBED

Beijing GUANGMING RIBAO in Chinese 22 Mar 81 p 2

[Article: "The Plant Protection Bureau, Ministry of Agriculture, Aids Eight Provinces and Autonomous Regions to Protect Against Cereal Smut"]

[Text] Last year the Plant Protection Bureau of the Ministry of Agriculture helped the agricultural departments in eight provinces and autonomous regions to set up 4 million mu of demonstration areas on protection against cereal smut; after the protective measures were taken, the average disease rate fell from a pre-1979 figure of over 15 percent to a level below 3 percent.

Cereal smut is one of the main diseases of grain crops in this country. In the initial period after Liberation, this disease was relatively serious, and covered a large area, with many affected stalks and an average disease rate of 8 percent. As seed treatment, including the use of fungicides, was developed, by the late 1950's the affected area had been greatly decreased, and the average disease rate in a single mu was less than 5 percent. During the 10 catastrophic years, cereal smut made a rapid comeback, and by 1979 the affected area nationwide had again reached 150 million mu, while the average disease rate had climbed back to 4 percent.

Last year, the Plant Protection Bureau of the Ministry of Agriculture assisted the agricultural departments of eight provinces and autonomous regions to set up 500,000 mu of demonstration areas on protection against the disease. A rigorous seed treatment system was set up throughout each demonstration area, plant protection teams were trained, and some areas even set up special leadership groups. As regards protection techniques, particular attention was paid to protecting against soil-borne head smut and each locality summarized and disseminated a comprehensive set of measures including the use of resistant varieties, rotation, culling of diseased stalks, seed treatment with fungicides and the like. Before 1979, the average disease rate in the demonstration areas was as high as 15 percent or more, but after 2 years of protective work, particularly that of last year, the figure fell below 3 percent.

8480
CSO: 4007/373

STRENGTHENING MANAGEMENT OVER AGRICULTURAL MACHINERY STRESSED

Beijing GUANGMING RIBAO in Chinese 28 Mar 81 p 2

[Article by Zhu Peiwei [2612 1014 1983]: "Devote Attention to and Strengthen the Management of Agricultural Machinery"]

[Text] There has been a great improvement in the level of our country's agricultural machinery and equipment since the founding of the People's Republic. At present, there are more than 2.3 million agricultural tractors of various kinds throughout the country, more than five million sets of irrigation and drainage equipment, and more than three million sets of equipment for processing grain, cotton, and oil crops. Total power of our agricultural machinery has reached 180 million horsepower, averaging 8.3 mu of cultivated land per horsepower. Besides this, there is also a large group of mechanically-drawn agricultural implements and other semi-mechanized agricultural implements. At present, the agricultural machinery owned by our rural people's communes accounts for one-third of the agricultural fixed capital, and in some communes this proportion reaches one-half or more. In the present period of readjustment, when it is not possible to achieve any relatively large increase in production in the agricultural machinery industry, I believe that the emphasis in agricultural mechanization work should be placed in better management and better use of existing agricultural machinery. Therefore, strengthening the management of agricultural machinery is a task that demands immediate attention. There are ample facts to prove that for agricultural machinery stations and teams under similar circumstances, results differ greatly depending on whether the agricultural machinery has been well or poorly managed. If well managed, the potential of the agricultural machinery can be fully developed; if poorly managed, not only can the potential of the machinery not be fully developed, it can also greatly increase the burden on the peasants.

Where is the potential of existing agricultural machinery manifested? For the country as a whole, because management work has not kept up, increases in the number of agricultural machines are extremely unmatched by the actual results of "mechanization." In comparing 1979 with 1965, our country's large and medium-sized tractors increased eight fold, small-scale tractors increased 421 fold, large and medium-sized mechanically-drawn agricultural implements increased five fold, and small-scale mechanically-drawn agricultural implements increased more than 300 fold, yet our country's machine-cultivated land area increased only 1.7 fold. Of course, in the course of this, there were also expansion and development of agricultural mechanical processes, but the effectiveness of the machinery was not fully developed, and of this there is no doubt. Not only this, but the overall amount of work completed per average horsepower by agricultural tractors has fallen year after year. In 1965, the highest year, the amount of work done per horsepower reached 244 standard mu, and by the end of 1979, the amount per horsepower was only 171 standard mu. There were multiple causes for this circumstance, but there is no doubt that poor management was an important cause.

From the standpoint of localities and units, the level of management of our country's agricultural machinery is also extremely uneven. The operational rate of some agricultural machinery is as high as about 90 percent, but there is much of it that reaches only 50-60 percent and even lower; the operating efficiency of some machinery averages as high as 300 standard mu or more per horsepower, but a great deal of it does not even reach 100 standard mu; for some mechanical operations the average three-item operating cost (fuel, maintenance, and management) per standard mu is only .40 or .50 yuan, but for some it is one yuan or more; some consume only about .6 kilograms of fuel per standard mu, and for some it is as high as one kilogram or more. We have calculated that if the operational rate of the country's large and medium-sized tractors were raised by 10 percent over present levels, it would be the equivalent of increasing the number of tractors in the country by several tens of thousands, a number roughly equivalent to 2 years' production by the Loyang Tractor Plant.

What is the standard for whether machinery management is good or bad? What scale should be used to measure it? According to the experience of various areas, I believe that it should encompass the following several points: One is whether or not the employment of agricultural machinery achieves high efficiency, good quality, low cost, and safety; two is whether or not there has been a relatively large increase in the level of "mechani-ation;" three is whether or not it promotes increased production, increased income, and increased contribution from agriculture, so that the prosperity of the peasants is established as rapidly as possible; four is whether or not we have obtained the greatest economic result with the smallest investment in machinery. These several points must be considered comprehensively and must not be isolated and weighed independently.

According to the actual circumstances in our rural villages at present, I believe that to strengthen the management over agricultural machinery, we must pay particular attention to the following several points:

1. Strengthen the establishment of an agricultural mechanization corps. Our country presently has an average of fewer than two tractor drivers for each tractor, and one-fourth or more of these are unlicensed. Of the licensed drivers, many are only able to drive and are unable to do maintenance, or are only able to do transport work and are not qualified to operate tractors in the fields. This is one of the important reasons for the constant occurrence of agricultural machinery accidents. To change this situation rapidly, the key point in the establishment of the corps should be in the training of an agricultural machinery technical force and a requirement that anyone going through training must achieve "three understandings and four capabilities" (understand the principles of mechanical structure, understand the machinery management regulations, understand the technology of agricultural production, be capable of operating, be capable of maintaining, be capable of eliminating stoppages, and be capable of field operations). We must examine and grade the various kinds of existing agricultural machinery operators and provide them with different compensation according to their grades.

2. All agricultural machinery stations and teams must certainly employ enterprise type management. As of the end of 1979, there were more than 31,000 commune agricultural machinery stations and more than 116,000 brigade agricultural machinery stations (teams) throughout the country, and there were also 1.06 million production teams that had hand-support tractors or small numbers of medium-scale tractors. To manage well and use well these agricultural machines of diverse styles and means of operation, we must have the agricultural machinery stations and teams implement enterprise-type management and value their own right to initiative under the leadership of the communes or brigades, implement independent accounting and not be subject to arbitrary equilitarianism and indiscriminate transfer of resources. We must strive for economic results and tie the compensation of agricultural machinery management personnel to the operational results of the agricultural machinery stations and teams.

3. We must strengthen management of the planning, mechanical affairs, financial affairs, and labor at agricultural machinery stations and teams. The agricultural machinery operations plan should be formulated in close coordination with the agricultural production plans of the communes and brigades. Management of mechanical affairs should implement high efficiency, good quality, low cost, safety, and must pay attention to the key points of technical maintenance, petroleum products management, and safe production. Management of financial affairs must thoroughly implement the policy of managing stations with thrift and hard work, institute a cash management system, strictly work to achieve planned income and expenditures, nroms for consumption, costs for operations, and institute a unit cost accounting for each machinery unit. The key point of labor management is to pay attention to "rewards and penalties for the five specifications" (specified implements, specified personnel, specified tasks, specified operational quality, and specified maintenance fees and petroleum consumption; with rewards for exceeding production and economies and appropriate reductions in compensation for deficient production or excessive consumption), and with this job responsibility system, compensation for tractor drivers should follow the principle of "from each according to his ability, to each according to his work," opposing egalitarianism.

4. We must take the deployment of our mechanical force seriously. On the basis of a reasonable selection of a set of equipment according to the natural and economic circumstances of various areas, we must correctly combine different brands, models, and numbers of agricultural machinery implements. For example, within a given area and unit, how to make a determination on the basis of the characteristics of the locality of the proper ratio of wheeled tractors to tracked tractors, the ratio of large, medium, and small tractors, the proportion of equipment sets to prime movers, the proportion of mobile operating sets to stationary operating sets, etc. The proper deployment of our machinery force can overcome blindness in assigning implements, can satisfy the requirements of agricultural production, and can secure the greatest economic result with the minimum investment of machinery.

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CSO: 4007/374

'LUMIAN NO 1' FOUND TO BE SUPERIOR VARIETY FOR NORTHERN COTTON AREA

Beijing RENMIN RIBAO in Chinese 1 Apr 81 p 2

[Article by Guo Zengmin [6753 1073 2404], Seed Bureau, Ministry of Agriculture: "'Lumian No 1' is a Good Superior Variety for Northern Cotton Growing Areas"]

[Text] "Lumian No 1" was successfully bred in 1976, and since 1977 has undergone testing and demonstrations in the cotton growing regions of the Yellow River basin and throughout the country, which have shown it to be a new variety with high output, good quality, strong resistance, and early ripening suited for promotion in northern cotton growing regions.

In 1979, "Lumian No 1" underwent wide area production demonstrations at Linqing County (a major cotton growing area), Shandong where per unit yields throughout the province and total output exceeded the all-time high. Per unit yields were double average per unit yields for the province. Last year the county again harvested a fairly good crop in which per unit yields again increased by about 20 percent. Shandong Province has adopted high speed propagation methods, and within 2 years 80 percent of the province's cottonfields have been planted to "Lumian No 1." Last year a particularly large bumper cotton crop was harvested throughout the province, and people summed things up by saying: "'Lumian No 1' is the foundation; policy implementation is the assurance, and the help of the heavens is a support." They also felt that of these three factors, "Lumian No 1" accounted for 40 percent and the others accounted for 30 percent each.

"Lumian No 1's" plant shape is compact, its branches coming off of the main stem at a small angle and pointing upward in a cone shape; its leaves are moderate in size, thick, dark green, and in pronounced layers. The plants contain a considerable amount of pubescence and tolerate aphids well. On this variety, summer bolls and pre-summer bolls predominate, and bolls are evenly arranged and concentrated along the top, middle and lower portions. Boll formation characteristic is strong and the boll maturation rate high. Ripened cotton bolls are open and concentrated, the open bolls large, and containing close to 90 percent cotton before frost, which is more than 20 percent more than for the former locally dominant varieties.

"Lumian No 1" is a medium maturing upland cotton variety inclined toward early maturation, which is not suitable for introduction to Yangtze River basin cotton growing areas with a long frost free period.

9432
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POTATO CULTIVATION TECHNIQUE ACHIEVES MAJOR BREAKTHROUGH

Beijing RENMIN RIBAO in Chinese 7 Apr 81 p 1

[Article by Correspondent Liu Binyan [0491 6333 7159]: "Major Breakthrough in Potato Production Techniques; Jin Xin [6855 9515] Wins Heartening Success After 29 Years of Perseverance in Amateur Scientific Studies; Manifold Increase in Output; Drought Resistant, Cold Resistant, Disease and Insect Pest Resistant, and Hoeing-Free"]

[Text] A new technique for rapid, general, and year after year increases in potato output has succeeded in preliminary tests in China, making the broad masses of peasants and forestry workers extremely happy.

After more than 4 years of experimental planting and 2 years of experimental cultivation on tens of thousands of mu of cultivated land in more than 1000 production units in 7 provinces and regions, in both high and cold mountains and on warm plains, this new technique has produced manifold increases in potato output. Planted at a non-staple food base in a certain forest region of North China during 1980, 13,000 mu of cultivated land yielded a potato harvest of more than 5000 jin per mu, which was between two and three times the harvest from old farming methods and close to the levels attained in Belgium and Holland, countries advanced in potato growing. From 30 mu experimental plots, yields averaged an astounding 12,800 jin per mu. During 1980, in places that had drought unprecedented during the past 50 years, and where there was either no harvest or a greatly reduced harvest of grain, use of this new potato planting technique produced yields of more than 2,000 jin per mu, or more than double the output in normal years attained by the old methods. Consequently, the peasants called it the "life-saver crop." The masses have summarized this new technique as effecting "three savings," (saving of land, saving of labor, and saving of seed potatoes), "three highs" (high output, high earnings, and amenable to a high degree of mechanization), "three resistants" (resistant to drought, resistant to cold, and resistant to diseases and insect pests), and "one free" (free from the need for hoeing).

This new technique was created by amateur scientific researcher, Comrade Jin Xin. Comrade Jin Xin had been a Chinese language teacher in Shenyang where for 29 years he unflaggingly labored by himself and at his own expense at scientific research. As long ago as 1978, party and government leaders began to give attention to Comrade Jin Xin's scientific research, and the Liaoning Provincial CCP Committee principle leading comrades of the Shenyang Municipal CCP Committee and others supported him in many ways. With the support and cooperation of many patriots enthusiastic about science, he finally completed the technique to score great successes in China's vast area.

The director of the Chinese Academy of Agriculture, the old agronomist, Comrade Jin Shanbao [6855 0810 1405], and the head of the academy's research department, Comrade Fang Cuinong [2455 4733 6593] supported Comrade Jin Xin's research throughout, giving extremely careful attention to the new technique and its results, and evaluating both very highly. Recently, the Academy of Agriculture decided to make this technique one of the projects for national evaluation in 1981. On 25 March, leading comrades in the National Agricultural Commission and the Ministry of Agriculture listened to Comrade Jin Xin's report on his research accomplishments.

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NATIONAL

KAIFENG PREFECTURE EXPANDS ECONOMIC CROPS

Beijing RENMIN RIBAO in Chinese 8 Apr 81 p 2

[Article by Xinhuashe Correspondents Fan Guanghua [5400 0342 5478] and Chen Dabin [7115 1129 2430]: "Further Expansion of Economic Crop Acreage in Kaifeng Prefecture Even While Assuring Continued Increases in Total Grain Output"]

[Text] During spring planting this year, Kaifeng Prefecture in Henan Province took account of local realities and continued to readjust its farm crop patterns, placing emphasis on suitable further expansion of its economic crop acreage even while assuring continued increases in total grain output. Now the prefecture's 1.52 million mu of spring sown grain crops and its 1.76 million mu of spring sown economic crops have been planted in accordance with the principle of adapting general methods to local conditions, and the broad masses of peasants are determined to win an all around bumper harvest in both grain and economic crops this year.

Kaifeng Prefecture faces the Yellow River on the north and straddles the plain in eastern Henan and the mountain region of western Henan. The topography is complex, soil quality varied, and suitable for the growing of diversified crops including cotton, peanuts, watermelons, sesame and tobacco in addition to grain. As a result of the influence of the ultra-leftist line, the economic crop acreage has been suppressed and further suppressed during the past several years, while the sweet potato acreage expanded to occupy more than 50 percent of the prefecture's total cultivated acreage. With such singlemindedness and one crop farming, advantage could not be taken of the strengths possessed by the soil, and grain output was very low. As a result of "putting all eggs in one basket" with no diversification, grain output did not increase; the collective had nothing; commune members were poor; and more than 80 percent of commune members in the prefecture received no cash distributions at year's end.

Beginning in 1978, and more especially following the Third Plenary Session of the 11th Party Central Committee, the CCP Committee and prefectural administrative units in Kaifeng made a thoroughgoing investigation and actively instituted a readjustment of the farm crop pattern. By last year the prefecture's economic crop acreage had increased by almost 500,000 mu over what it had been in 1979, amounting to 25.6 percent of total cultivated acreage. Thanks to sensible distribution of farm crops, grain crops and economic crops promoted each other. This, plus general institution of one form or another of a system of responsibility for production, and meticulous care of the fields brought consecutive years of bumper harvests in agriculture. Despite reduction in acreage by almost 500,000 mu, increased cotton and edible oil output strengthened the collective economy, and communes, brigades and commune members had money to buy machines, farm implements, and farm animals. After cotton seeds and peanuts were pressed for their oil, large quantities of cake residue was returned to the fields as fertilizer to increase the soil's fertility and promote further increases in grain output. Since 1979, output of grain in the prefecture has shown annual incremental increases of 8 percent, and per capita consumption of grain by commune members has averaged a 101 jin increase to reach 432 jin. Output of cotton, rape, and peanuts has increased by from several fold to between 10 and 20 fold. Total income from economic crops as a proportion of total income in the economic structure of agriculture rose from 14.2 percent to 25.4 percent, thereby vastly increasing accumulations by collectives, distributions to commune members in the prefecture, and the contribution to the state. Sankao County, which has long had a shortage of grain and money, last year boasted more than 10,000 households with incomes of more than 1000 yuan and grain yields of more than 1000 jin per mu, amounting to 10 percent of the total number of households in the county. This has fundamentally reversed the "three dependencies situation of dependence on resales of grain at uniform prices by the state for consumption, dependence on relief for expenditures, and dependence on loans to live.

The Kaifeng CCP Committee and government administrative offices both believe that the prefecture still possesses great potential for developing economic crops. The all-time records for several major economic crops have not yet been re-attained. Henceforth, in consonance with local conditions, and while assuring steady increases in grain output, there should be planned, proportionate, year by year expansion of the economic crop acreage in a constant tapping of the potential for economic crops. Further readjustment of the crop pattern in accordance with local realities and the desires of the peasantry has made commune member zeal for production higher than in another other year. Spring farming got underway earlier this spring, and was done more rapidly and more solidly. This year's grade one seedlings are double the number last year in the prefecture's 5.1 million mu of wheat, and growth of the seedlings is heartening. On 3.4 million mu of spring-sown land, plowing and harrowing is underway, and base fertilizer has been applied to more than 50 percent of it.

9432
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RECENT AGRICULTURAL MAPPING AND SURVEY WORK REVIEWED

Beijing GUANGMING RIBAO in Chinese 13 Apr 81 p 1

[Article by Liu Sa [0491 7366]: "The Surveying and Cartography Front Makes an Active Contribution to Developing Agriculture"]

[Text] I have learned from the National Surveying and Cartography Work Conference that since 1979 the surveying and cartography bureaus of all provinces, municipalities and autonomous regions have furnished large quantities of map data for a nationwide agricultural and natural resources survey and have provided other surveying and cartographic services, making an active contribution to developing agriculture.

Since the third party plenum, the leadership and staff of surveying and cartography departments in the various localities have taken the development of agriculture their own concern and have made service to agriculture a primary activity. When the provincial bureaus assigned the tasks, tehy conscientiously listened to and considered the opinions of the agricultural departments, and gave priority to urgent matters. At the same time, they actively trained technical personnel in map reading and map use for the agricultural departments. In the last two years or more, the surveying and cartography departments of the various localities in the country have carried out survey and mapping tasks covering a total of 310,000 square kilometers, including: such areas as the valleys of the Songhua and Songhua No 2 Rivers in Jilin Province, the three-river plain in Heilongjiang, the Jiaxing and Ningbo areas in Zhejiang, the Wanbei area of Anhui, the Pearl River delta in Guangdong, the Yangtze-Han plain in Hubei, and such commerical grain growing districts as Qujing and Yuxi Prefectures in Yunnan; rural water conservancy works in the Qinzhou sugar-growing base area in Guangxi, the Yan'an area in Shaanxi and the Xining area in Qinghai; and electrical and irrigation works in Tianzhu, Jingtai and Jingyuan, Gansu Province, as well as some other minor survey and mapping tasks. This work has laid an excellent foundation for scientific plans for developing agricultural production on the basis of the actual situation in the agricultural departments and on local conditions.

8480
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NATIONAL

STATE COUNCIL RAISES TOBACCO PROCUREMENT PRICE

Beijing ZHONGGUO CAIMAO BAO [CHINA FINANCE AND TRADE JOURNAL] in Chinese 25 Apr 81 p 1

[Article: "Increase in Flu Cured Tobacco Procurement Price; Emphasis On Expansion in Price Spread for Grades; Great Increase for Premium and Medium Grades; Little Increase for Inferior Tobacco Grades; Lowest Grade Tobacco Virtually Unchanged; Suitable Lowering for Substandard Grades of Tobacco; Procurement Prices Increased by an Average 20.3 Percent Per Dan"]

[Text] The State Council has approved increase in the procurement price for flue-cured tobacoo beginning with the marketing of new tobacco this year.

The total extent of increase in the procurement price of flue-cured tobacco is as follows. For standard grades of flue-cured tobacco from 13 areas in the country under the administration of the Supply and Marketing Cooperative Main Office, the average procurement price was increased from 70.39 yuan to 87.04 yuan per day for a 23.7 percent increase. The procurement price for flue-cured tobacco from other areas is to be set by provinces, municipalities, and autonomous regions with reference to prices in producing areas.

A notice from the Supply and Marketing Cooperative Main Office and the State Pricing Administration noted that the emphasis on the increase in the procurement price for flue-cured tobacco is on enlargening the price spread among grades. In order to increase quality of flue-cured tobacco and increase the proportion of high quality tobacco, a system was adopted whereby premium and medium grade tobacco procurement prices are much increased, inferior grade tobacco procurement prices are little increased, low grade tobacco procurement prices are virtually unchanged, and appropriate decrease has been made in procurement prices for substandard tobacco. After these arrangements were made, the average procurement price for all grades of tobacco nationally rose from 60.04 yuan to 72.23 yuan per dan for a 20.3 percent increase. Specifically for each area, the extent of increase for areas that produce a large amount of fine quality tobacco will be greater than 20 percent. For areas that produce little high quality tobacco, the extent of increase will be less than 20 percent. For areas that produce a large proportion of low or second quality tobacco, efforts will have to be made to increase output of fine quality tobacco. There can be no raising of quality or raising of prices to increase farmers' earnings.

The circular noted that in readjusting the procurement price for flue-cured tobacco, suitable arrangements could be made for the price spread in areas on the basis of a rational flow of commodities, but attention should be given the dovetailing of prices with those in neighboring areas. In places where price differences formerly existed between cities and countryside, price differences should be retained. As to whether price differences should be restored in places that have already eliminated price differences between cities and the countrysides, provinces and autonomous regions will have to decide.

The circular pointed out that following increase in the procurement prices for flue-cured tobacco, suitable increases would be made in transfer and allocation, and supply prices. In formulating transfer and allocation, and supply prices for flue-cured tobacco, except for taxes, interest, and spoilage readjustments as stipulated, no changes would be made in other fees.

9432
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NATIONAL

STATE COUNCIL STRESSES TEA PRODUCTION

Beijing ZHONGGUO CAIMAO BAO [CHINA FINANCE AND TRADE JOURNAL] in Chinese 30 Apr 81 p 1

[Article: "Tea Procurement, Allocation and Transfer, and Supply for Export Plans Must Be Guaranteed Fulfillment Is Strong Emphasis of Circular Issued By State Council on Intensification of Tea Work"]

[Text] The State Council recently issued a circular on the intensification of tea work requiring that each tea-producing province and autonomous region strengthen leadership over tea work, strive to increase per unit yields, improve quality, do a good job of procurement, and fulfill or overfulfill state plans in quantity and quality.

The circular pointed out that since 1963 China's production and quantity of procurement of tea has steadily climed, and overfulfilled plan in 1980 in a generally good situation. However, in some places some production units do not strictly carry out state plans. Quite a few units have meddled in the procurement of tea raising prices to do rush buying in competition with the state for supplies.

The State Council circular stipulated:

1. Tea is a second category commodity and a major goods for export domestic sale. Plan must be adhered to in its purchase and contracts signed with producing units. The state will, in accordance with policies, stipulate supply of consumption grain to tea farmers, will conscientiously honor award sales policies, and will promptly issue forward purchase funds and supply various goods needed for the production of tea. All tea producing units (including state-operated and collective units) must fulfill quotas in accordance with the state plan, for sale to the state of tea of certain quality and in certain quantity. After fulfillment of the state plan, province and autonomous region governments shall decide whether to permit marketing of the remainder. Tea procurement departments shall persevere in the evaluation of tea against standards, strictly fix price in accordance with quality in a policy of a good price for good tea and an inferior price for inferior tea, neither permitting downward pressure on grade or downward pressure on price, nor upward pressure on grade or upward pressure on price. Provinces and autonomous regions with quotas for shipments or supply for export must guarantee fulfillment of state plans handed down for shipments to other provinces and supply for export.

2. In order to arouse the enthusiasm for production of tea farmers and encourage production units to overfulfill sales of tea, for all excess sales of crude tea (not including broken black tea or side-marketed tea), the industrial and commercial tax rate will be reduced from 40 percent to 20 percent, and the entire amount of the reduction will be given to the production units making excess sales of tea.

3. Procurement, refining and processing, and allocation and transfer criteria for tea will be administered by the National Supply and Marketing Cooperative main office. Processing criteria for export tea will be managed by the Ministry of Foreign Trade. All tea producing provinces and autonomous regions with the exception of those currently being administered by foreign trade departments will be subject to uniform administration by departments responsible for tea in supply and marketing cooperatives, and no other departments can meddle in procurement. Government organizations, groups, military units, schools, industrial plants and enterprises of any kind may not go to rural collective and state-owned tea producing units to purchase tea.

4. After they have fulfilled state plan quotas in accordance with the above stipulations, all producing units marketing tea must, in accordance with regulations, pay purchase link and retail link industrial and commercial taxes, and market prices may not exceed the locally stipulated maximum limits. Supply and marketing cooperatives and the commercial system in producing or marketing areas may not purchase or market tea at negotiated prices.

5. All small tea refining plants approved for new construction by the Provincial Design Commission and all their output must be made part of the state plan in accordance with regulations. Those not yet approved should be studied and handled by the Provincial Design Commission. Henceforth, the state shall build no more tea refining plants.

6. The national production pattern for various categories of tea must be maintained relatively stable. Provinces and autonomous regions that believe a need exists to change the existing pattern of production for various types of tea should seek the agreement of the department in charge in the State Council. Existing side-marketed tea production bases must consolidate. Production of side-marketed tea cannot be impaired because of changes in other types of tea.

7. In order to plan for production and supply of scented teas, major commune and brigade producers of flowers for the state should intensify management of fragrant flowers, using management methods for second category commodities for jasmine and yulan magnolia and carry out planned procurement.

9432
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NEW RICE HYBRID SHOWING SUPERIOR CHARACTERISTICS

Beijing RENMIN RIBAO in Chinese 6 May 81 p 1

[Article: "A Major Invention on the Agricultural Front of Our Nation and Its Propagation Lead the World; Hybrid Rice Produces High Yields, Has Superior Quality and Produces Large Gains; Over 5 Years, It Has Been Sown Over an Accumulated Area of 250 Million Mu, Produced an Increased Yield of 26 to 27 Billion Jin, Average Per Mu Yield Is Over 100 Jin More Than the Yield of Other Superior Varieties"]

[Text] Reporter He Huangbiao [0149 7806 1753] has learned from informed sources: The strongly superior hybrid paddy rice, the first of its kind in the world bred by our nation's scientific and technical personnel Yuan Longping [5913 7127 1627], Li Bihu [2621 1801 3275], Yan Longan [7346 7893 1344] and Zhang Xiancheng [1728 0341 4453], has a developed root system, strong tillering, a thick stem, large panicles and many grains, superior quality of rice, wide adaptability, and strong resistance to adverse conditions. After several years of experimental planting and propagation, it has already produced large economic gains. In 1975, it was successfully test planted at many localities and immediately afterwards it was rapidly propagated north and south of the Changjiang. From 1976 to 1980, the cumulated sowing areas over these 5 years reached over 250 million mu, it produced an increase yield of 26 to 27 billion jin of food grains, average per mu yield was 100 jin more than that of other superior varieties of paddy rice.

Hybrid rice is an important invention in our nation's agriculture. Its research and propagation are both in a leading position internationally. It has broken through the view that "paddy rice is a self-pollinating crop and hybridization has no superiority." New methods of hybridization were sought and new paths towards increasing the yield of paddy rice on a large scale were opened up. It has greatly enriched the theory and practice of genetics and breeding of agricultural crops and has exerted an important influence internationally. In 1977, it was successfully intorduced and test planted in Cambodia. In 1979, it was introduced to the international paddy rice center in the Philippines. In 1980, it was our nation's first agricultural technique to be introduced to the United States, and after comparative experiments, the average per mu yield of hybrid paddy rice produced an increase of 165.5 to 180.3 percent more than superior varieties of the United States. Some other nations are also introducing, experimenting, test planting our nation's hybrid paddy rice. Famous paddy rice experts of many nations believe our nation's hybrid paddy rice occupies a "leading position" in the world.

9296
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BETTER UTILIZATION OF FISHERY RESOURCES NEEDED

Shanghai HAIYANG YUYE [MARINE FISHERIES] in Chinese No 5 1980 pp 1-2

[Article by Guo Renda [6753 0088 6671]: "Rational Utilization of Ocean Fishery Resources"]

[Excerpt] Since the founding of the nation, our nation's fishery production has developed greatly. Up to 1957, the end of the First Five-Year Plan, the total fishery catch surpassed 3 million tons, about seven times that at the time of liberation. But in recent years, fishery production has suffered from the unscrupulous catching of pelagic fish in coastal waters, some resources have been seriously destroyed, fewer fish are being caught, each catch is smaller, and the yields and quality have all visibly dropped. In this situation, how to increase the fish catch in order to provide the market with more superior quality fish has become a problem of concern and a problem awaiting solution. The development of freshwater fish culture has potential as long as the problems of bait and feed and policies and systems are conscientiously solved. The yield of freshwater fish will increase greatly. But ocean fisher is also a very important aspect. The ocean has rich natural bait and feed, and we are already have a preliminary foundation for production. As long as we face objective reality, respect the patterns of nature, and conscientiously do the work of reorganizing fishery well, ocean fishery will play a more important role in solving the problem of fish as food for the people in cities and villages.

Over the past decade, and more, our nation's oceangoing motorized fishing vessels have developed rapidly. The numbers and horsepower has increased by multiples, but almost all of these vessels are net-towing fishing boats. For example, among state-operated fishing craft, over 90 percent of the catch is obtained by towed nets. In the production of fish by motorized fishing vessels with sails, the percentage of the catch from hook and bait and from mobile fishing operations is very small. Protection and rational utilization of fishery resources in coastal waters should be based on the habits of the various types of fish and should comprehensively take into consideration the various fishing methods which can selectively catch fish from the bottom of the sea, from intermediate depths, and from the shallow waters of the sea. Japan has a strict system for controlling the methods of fishing in coastal seas. In the yield of fishery production in coastal seas, the catch from hook and bait and from mobile fishing operations constitutes about one-third of the yield, while the yield from netting and the yield from towed nets each constitutes one-third.

Most of our nation's fishing vessels operate along the littoral of the coastal seas. About 65 percent of the catch from the ocean is caught by motorized vessels in the coastal regions of the East China Sea and Yellow Sea, where fishing by towed nets is prohibited, and the South China Sea region within a depth of 60 meters. In particular, the fleet of small fishing vessels of 20 horsepower built in recent years tow their nets more frequently through regions prohibited to fishing. In addition, during some of the major fishing seasons, as many as 10,000 fishing vessels gather together and tow their nets in a crisscross fashion, and frequently a not too large area of the sea floor will be swept several times a day. Every layer of the sea is swept, and even young fish are not allowed to remain. While towing and netting are being carried out, the spawning grounds and areas of fish reproduction are disregarded. Fishing for quantity is blindly pursued; all offspring of fish which cannot be consumed and are used as fertilizer. In addition, quality is not emphasized in fishery production and coastal sea catching, causing a lot of fish to rot and deteriorate or to be salted. This is another important reason for the shortage of superior quality fish in the market.

To protect, readjust, and rationally utilize the fishery resources of the coastal seas, the method of catching fish must first be readjusted. The number of fixed nets along the coasts that massively destroy fry and young shrimp should be strictly limited. Zones and seasons in which fishing is prohibited should be established. Some regions of the sea should gradually be abandoned. A fair number of the presently available fishing vessels with nets should be refitted according to their technical status to operate by hook and bait and for mobile fishing operations, which are methods beneficial to the protection of resources. Some efforts can be converted to fish culture. The sinking of nets for catching fish along the littoral areas of coastal seas should be rationally distributed and developed according to plan. Second, the ocean zone for fishing operations should be expanded. Within the regions where netting by motorized vessels is prohibited, all vessels should be prevented from towing nets. Fishing vessels with better capabilities should be organized and sent to fishery production zones farther from the coast--especially state-operated fishing vessels. Vessels with more power should sail farther out into the deep sea for fishing. Third, the quality of fish must be assured. In particular, work to preserve the freshness of the fish should be done well on the fishing vessels at the first line of production. Measures should be taken to gradually reduce the amount of fish salted on board. The present fishing vessels must undergo technical rebuilding. Large ships should be equipped with facilities for temperature preservation and cold storage. Some can be equipped with facilities to freeze the fish. Some vessels for onboard freezing, cold storage, and transporting of fish can be dispatched to some ocean zones. This will assure the quality of the fish. They can also accompany fishing vessels into the deep ocean zones for fishery production. Fourth, efforts should be exerted to develop fish culture and propagation in seawater. Fifth, administration of fishing operations abroad should be strengthened in order to establish good procedures for onboard production.

The opening up of deep sea fishing zones should be based on our nation's actual situation. Active and careful measures should be taken to quickly expand the areas of operation and to increase the quantity of the catch. By deep sea regions, we are referring to the ocean regions of the continental shelf or the continental slope beyond the coastal seas. They belong to the area of the continental shelf or are affected by it. These regions have not been fully utilized, and their potential is great. The ocean zone from 100 to 200 meters deep in the East China Sea of our nation has an area equivalent to the area prohibited from fishing by net-towing motorized fishing vessels. The water regions of the continental shelf from 100 to 200 meters deep in the northern part of the South China Sea and the water regions of the continental slope from 200 to 1,000 meters deep have an area one and a half times larger than the fishing zone 60 meters deep east of Guangdong. None of these regions has yet been rationally developed or utilized by us.

The ocean zones east of Taiwan belong to the western edge of the Pacific. The water is deeper and fishery resources are rich. Fishermen from Taiwan Province mostly fish with stringed hooks and mainly catch tuna. The annual yield is several tens of thousands of tons. There is still a definite potential here.

When opening up ocean fishing zones, net-towing fishing vessels of larger work capacity should be organized for the East China Sea for deep sea fishing and production. The average yield of these ocean regions may be lower than that of the coastal seas, but considering the whole situation, catching a smaller number of good quality fish with a smaller number of nettings is worthwhile. Deep sea netting must be continued. Vessels and nets must undergo the necessary changes in order to adapt them to the needs of production in ocean regions. Deep sea fishery zones in the South China Sea should be opened up. Fishing by net-towing operations in the regions of the continental shelf 100 to 200 meters deep should first be grasped, and then deep water fishing by towed nets in waters 1,000 meters deep should be opened up. The ocean regions of Xisha, Zhongsha, and Nansha in the South China Sea should be developed. Appropriate fishing methods such as stringed hooks need to be used, and they should be equipped on fishing vessels.

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BRIEFS

ESTIMATES OF STATE FARM OUTPUT FOR 1980--The following are estimates of output and profit of the state farm and land reclamation system for 1980: total grain and bean output 15,094 million jin; commodity grain turned over to the state 5,678 million jin; total cotton output 1.74 million dan; total oilseed output 2,303,900 dan; total [raw] sugar output 28,276,400 dan; total rubber output 102,600 tons; total tea output 319,300 dan; gross industrial and agricultural output value 8,667 million yuan; operational profits 600 million yuan. The 1980 targets for total grain output, per-mu yield, commodity grain to be turned over to the State, gross industrial and agricultural output value and enterprise profits were all record high; and increased output was realized in grain, cotton, edible oil, sugar, tea and rubber production. [Beijing ZHONGGUO NONGKEN No 3, 24 Mar 1981 p 32]

SPRING TEA HARVEST--Beijing, June 15 (XINHUA)--Peasants in China's 13 tea-growing provinces and one autonomous region had sold 98,750 tons of spring tea to the state by the end of May, according to the all-China federation of supply and marketing cooperatives. This represents a 14.5 percent increase over the same period of 1980. Zhejiang Province, one of the country's major tea-growing centers, has so far purchased 42,050 tons of spring tea, meeting 64.8 percent of its annual quota. Anhui Province has bought 14,950 tons, 50.8 percent of the annual target. China's tea-growing areas are Zhejiang, Anhui, Jiangsu, Jiangxi, Fujian, Yunnan, Guangdong, Shaanxi, Sichuan, Guizhou, Hubei, Hunan, Henan and the Guangxi Zhuang Autonomous Region. [Text] [OW150448 Beijing XINHUA in English 0255 GMT 15 Jun 81]

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PROGRESS, TENTATIVE PLANS FOR HYBRID RICE RESEARCH IN FUJIAN

Fuzhou FUJIAN NONGYE KEJI [FUJIAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 2 10 Apr 81 pp 1-4

[Article by Chen Danziang [7115 5110 4382], Rice and Wheat Institute of Fujian Provincial Academy of Agricultural Sciences: Progress and Tentative Plans for Hybrid Rice Research in Fujian"]

[Text] 1. New Developments in Hybrid Rice Research

After the first group of successes in breeding V 41 sterile line and Siyou No 2, Siyou No 3, Siyou No 6, and Minyou No 3, hybrid rice research work in Fujian Province during the past several years has selectively bred yet other combinations to make new progress. (1) Siyou 30: Disease resistant and high yielding. Suitable for double cropping of rice in plains areas and as a single rice crop in mountainous areas. In promotional demonstrations in the double cropping of rice in Minhou, Fuqing, Shanyou, Jinjiang, Longhai, and Longyan counties, it produced outstandingly high yields. During 1980, it was extended to cultivation on between 600,000 and 700,000 mu in the province. In the future it may be extended to cultivation in coastal plains areas of southern Fujian. (2) V 20A x N: Took first place in provincial area tests in 1979. Test planted on 0.6 mu at Shanhou Production Brigade in Longhai County, it produced yields of 1493.2 jin per mu. Each panicle contained an average 129.2 grains for which the per thousand weight was 38.4 grams. Reports from everywhere reflect strong heterosis and great potential for increased yields from this combination. In 1980, demonstrations were held to promote its cultivation throughout the province. (3) V 20A x Zhi 25: Demonstrated high yields in test plantings in all prefectures during 1979. Test planted on 0.6 mu at Shanhou Production Brigade in Longhai County, it produced yields equivalent to 1420.4 jin per mu. In 1980, it was extended to cultivation on 10,000 mu in the province. (4) V 41A x 3533, V 20A x 3533: Both are early maturing combinations. Test planted in 1980 at Changle, Fuqing, and Longqi counties under poor weather conditions of low temperatures during the early stage of growth and high temperatures that hastened ripening during the late stage of growth, yields were 940 jin, 950 jin, and 1070 jin per mu respectively. Total period of growth is 125 days, which makes it suitable for planting as an early crop. Continued promotional demonstrations will be made. Great progress has also been made by all prefecture (and municipal) agricultural institutes in the breeding of three lines. In the case of the Putian Prefecture Institute, for example, the newly bred combination, Weiyou 630 manifested large grains (a per thousand grain weight of from 34 to 35 grams), a large number of effective panicles, and ripening that was earlier than for Siyou No 2. It produced strikingly increased yields in soil of medium fertility. During 1980, its cultivation spread over a certain area. The Zhenbai sterile line bred by Ningde Prefecture has good blossoming habits and characteristics, a high rate of cross pollination, fair resistance to rice blast, and greater heterosis and higher yields than combinations of Zhenbai sterile line and restorer lines such as IR 661. A restorer line has been found for the Longxin No 1 sterile line bred by Longqi Prefecture, and it is now being combined and evaluated. V 41A x 7939, a new combination bred by Jianyang Prefecture's institute shows early ripening and resistance to disease. The 688 sterile line bred by the Sanming Prefecture Institute, the Rongxin 75 sterile line bred by the Fuzhou Municiple Agriculture Institute, and the Minxizao sterile line bred by Longyan Prefecture Institute show stability in their sterileness. New combinations resulting from their combination with other lines are also being demonstrated and evaluated.

2. The Direction and Tentative Plans for Hybrid Rice Research

(1) Direction of Research and Breeding Objectives. Though the hybridization of rice plays a role in increasing yields in production; nevertheless, as a result of the short period that research has been conducted and the rapid pace of hybrid spread, plus the lack of a theoretical foundation to guide this research, it has not been possible to clarify and fully probe the genetic laws of hybrid rice and the problems that may appear in production. Currently the main problems that have appeared in hybrid rice production are an overly long growing period for existing combinations, poor disease resistance, and an insufficiently well developed seed production system with resultant decline in seed quality. As a result full advantage cannot be taken of the heteroses of existing combinations of hybrids, and the degree of increase in output cannot be further increased. Consequently, henceforth, hybrid rice research must direct its many attacks toward bumper output, early ripening, resistance to disease, and superior quality. New combinations are required that are notable for their high yields but also that have been bred for early ripening and are suited to the existing farming system, that are valuable for high yields from dual cropping of rice, that are able to resist various natural disasters, that have higher yields than combinations being promoted, and that have good quality and a high output of husked rice. At the same time, study of the problem of seed production also requires consideration to increase quality of seed production so as to make fuller use of hybrid rice's benefits in high yields.

1. Breeding of xian type early maturing, bumper yield, resistant combinations. Hybrid rice varieties currently in use in Fujian Province have an overly long growing period. South Fujian aside, most places are able to grow only a single crop of medium and late rice or two crops of late rice. The dual rice crop area in the province amounts to about 12 million mu, and in 1980 hybrid rice was grown on only 600,000 mu or 6 percent of the total. Were an early maturing hybrid suitable as an early crop to be promoted, it would play a greater role in increased yields from the early rice crop throughout the province. Therefore, we believe the breeding of an early maturing hybrid rice is currently a problem urgently in need of solution. Required is an early maturing combination that ripens in about 120 days, produces yields at the 1000 to 1200 jin per mu level, and is strongly resistant to

diseases and insect pests. The principal way of solving this problem lies in the breeding of an early maturing restorer line. However, in actual practice with the breeding of three lines, conflicts arise between early maturing and other heteroses, and between early maturing and high yields in a situation of early maturing without other advantages. In order to solve this conflict, a tentative preliminary plan is to select a plant of relatively good stock and then consider the following several aspects (1) the need to breed an early maturing combination composed of a sterile line and an early maturing restorer line that are genetically fairly distant in order to increase the heterosis; (2) Since the impairment that early maturation causes to the number of grains in panicles is substantial, breeding of an early maturing combination must suitable increase the per thousand grain weight. (3) breeding of an early maturing combination with numerous panicles, using numerous panicles to obtain high yields. (4) breeding of an early maturing high yield combination with strong resistance (principally resistance to rice blast). All these are for the purpose of attaining the goal of early maturity with high yields.

2. Breeding of intermediate and late rice combinations that produce bumper harvests and are disease resistant. Most available hybrid rice combinations produce yields of between 1,100 and 1,200 jin per mu, and have a potential for yields of from 1,500 to 1,600 jin per mu. In view of this level of yields and the potential, under current production conditions in Fujian province where open field yields amount to only 500 to 700 jin per mu, a great potential exists for further increases in yields. Within 3 to 5 years, as a result of improvements in farming techniques and sensible increases in fertilization, it will be entirely possible to have steady annual increases in yields at a 50 to 60 jin per mu rate of increase. Therefore, in terms of present production needs, it is necessary to improve the existing three lines with emphasis on increasing disease resistance, breeding high yield combinations resistant to rice blast and bacterial blight to attain the goal of consistently high yields.

3. Breeding of superior combinations with high yields and strong disease resistance: With the development of agricultural production, and particularly in a situation of advance in agricultural modernization, urgently needed is a rather large increase in per unit yields of rice. New combinations of hybrid rice with a rather high yield potential to make a breakthrough must be bred if large area increases in output are to be spurred. Therefore, future hybrid rice research must have as the object of struggle the breeding of strongly superior varieties with 200 to 300 jin per mu greater yields than present combinations, i.e. with yields of 1,500 jin per mu and potential for yields of 1,800 jin per mu. Such a high yield variety with multiple superior characteristics should have compact plants, upright leaves, reasonable dispersal, dark leaf color, thick leaves, and a high rate of utilization of light energy. Effective panicles should number between 200,000 and 220,000 per mu, each panicle containing 150 to 160 grains with a per thousand grain weight of 32 grams or more. The breed should also be disease resistant and be widely adaptable.

(2) Course and Methods

1. Improvement and utilization of the three lines of wild abort. We are still doing research mostly on wild abort types. Improvement in the sterile line will be

determined by breeding of the sterile-free line. Therefore, it is necessary to breed a sterile-free line and then transfer factors by breeding to the sterile line. The good sterile line required in the future will have to be early maturing, bumper producing, disease resistant, and have good blooming habits and characteristics. A look at materials studied in the past, such as Longzi No 1 shows strong heteroris in wild abort sterile-freeness, but its blooming habits and characteristics are not good. Fuke No 1 has good wild abort sterile-freeness and its cross pollination rate is high, but its disease resistance is poor and thus it cannot meet the pre-set goals for breeding. This shows that use of a good sterile-free line to transfer traits through breeding to produce an ideal sterile line will not be easy either. With regard to the improvmment and transfer breeding of wild abort sterile lines, we plan initially to use sterile-free ones in which bumper yield and resistance characteristics are fine and the period until ripening is suitable to carry out transfer breeding to improve its blooming habits and characteristics, so that the cross-pollinization and fruiting rate for xian type will be increased to between 40 and 50 percent. Use of sterile-free x sterile-free hybrid breeding to improve agronomic characteristics, and transfer breeding to sterile lines of different characteristics such as numerous panicles with numerous grains, large panicles containing large graines, high resistance, and resistance to numerous diseases in order to meet needs for making superior combinations. In the breeding of new resources of sterile lines, broad utilization of plasma resources and use of interspecific, semi-interspecific, and inter-variety hybrids or physio-chemically induced methods of change to create a group of new resources and new types of sterile lines.

Breeding of restorer lines. Improvement in restorer lines is a major aspect of configuring new high yield, disease resistant, early maturing hybrid rice combinations. In view of the weaknesses in existing restorer lines, directed improvements and simultaneous creation of new restorer lines will be valuable in the breeding of strongly superior combinations. As regards the early maturation problem, all that is needed is to breed an early maturing restorer line, and then it will be possible to configure an early maturing hybrid rice combination, but it is also necessary to give attention to problems of early maturation in combination with other heteroses, and early maturation and resistance to disease. If the sterile lines or the restorer lines of hybrid combinations have resistance to diseases, their hybrids will generally exhibit disease resistance as well, thus in the course of "artificial breeding of sterile-frees" and "artificial breeding of restorers," it is necessary to use disease resistant parent pairs, thereby leading to "resistant sources," to breed disease resistant sterile free lines or restorer lines. Experience has shown that it is not very possible for a variety to be absolutely resistant to diseases or resistant to diseases for a long period of time in any given locale. Therefore, in addition to giving addition to the breeding of highly resistant new combinations, it is also necessary to advocate rotational planting of combinations, it is also necessary to advocate rotational planting of combinations to throw into disarray mutations and adaptations of pathogenic bacteria. In future, a strongly disease-resistant restorer line may be used to work up several new combinations, and with rotational cropping be able to win excellent results in disease resistance.

Breeding of a superior restorer line must meet three requirements; namely bumper output, strong restorer characteristics, and disease resistance. Specifically, it requires good plant stock, high tillering and panicle formation rates, numerous grains per panicle (more than for IR 24), large grains, strong resistance to disease, strong restorer capacity, and a period to maturity that is shorter than that of IR 24. In terms of major superior economic characteristics, also required is fairly strong genetic transmission capacity to play mutually supportive roles. An example might be rice N having a restorer line with a per thousand grain weight of 33 grams so that the grain from the hybrid would be big, surpassing that of the parents. Currently the breeding of restorer lines uses the method of restorer x restorer to make full use of the bumper yield characteristics and strong restorer characteristics of IR type and N rice as parent pairs. Henceforth it will be necessary to expand restorer resources, using distant restorer resources, and the artificial creation of new restorer lines, for example through the use of IR 661 x reed rice, or IR 24 x corn rice.

To summarize, in future breeding of the three lines and in the matching of strongly superior combinations, it will be necessary, first of all, to both assemble a broad range and create various kinds of materials (particularly those that are disease resistant, cold resistant, early maturing, and are highly efficient in use of light) to provide all sorts of parent pairs for three line breeding. In the selection of parent pairs, in addition to giving attention to comprehensive characteristics, attention must also be given to the genetic distance between parent pairs, and to genetic power of transmittal of characteristics and ability to combine in order to overcome blindness in the breeding of the three lines.

2. Utilization of xian and geng hybrid heteroses. The hybridization of xian and geng rice is a semi-intervariety hybridization with strong hybrid heterosis manifested in strong tillering, large panicles with numerous grains, but with a low fruiting rate, which poses very great difficulties for use in production. Both inside and outside Fujian Province forces have been mustered to attack this difficult problem. If a breakthrough is made, a major leap will have been made in output from hybrid rice with combinations yielding from 1,800 to 2,000 jin per mu being realizable. Among our current experimental materials are Fuliao No 1A x Nongyin 32 for which the fruiting rate in the first generation hybrid reaches 68.3 percent, and from which yields per plant weigh 44 grams. These xian-geng sterile line and geng-xian restorer line materials merit serious attention and await further research.

In order to solve problems in a low hybrid fruiting rate, and poor fillion out of grain occassioned by xian-geng hybrid lack of relationship and properties, our first tentative plan is to make a restorer line from a xian type sterile line x a stable xian-geng hybrid plant line, using a geng-xian sterile line x a stable xian geng hybrid progeny as the restorer line conducting research in a stable xian-geng hybrid plant line transfer of traits by breeding to make a sterile line. This would then be crossed with a xian or a geng restorer line. This would be to infuse xian rice with constitutents of geng material, and to infuse geng rice with constitutents of xian material, through such bridging to readjust the relationship and potency of xian-geng hybrids, increasing the fruiting rate, and also giving attention to surmounting the disadvantageous super-parental heterosis of plant heights and growth period and characteristics disadvantageous to seed production.

3. Breeding of combinations amenable to mechanized farming. In order to realize the mechanization of agriculture, mechanization of rice harvesting machines used in South China must be placed on the agenda, and a start be made now both to import advanced techniques from abroad and to manufacture our own combines that are suitable for xian and geng farming in South China, making sure that such efforts are closely meshed with work in the breeding of rice varieties. Consequently, hybrid rice research work must make breeding of varieties compatible with mechanized harvesting one of its goals. On the basis of the results of Sino-Japanese experiments with combines conducted by the Provincial Farm Machine Institute in cooperation with the Kubota [0036 0202 3944] Company of Japan using a Japanese style machine, 11 ku-3000, to harvest Siyou No 2, V 20A x Gui 630, and Hongwan 52 varieties, the rate of gross loss was greater for Hungwan 52 than for V 20A x Gui 630, and the gross loss rate for V 20A x Gui 630 was greater than for Siyou No 2. The gross loss rate for Siyou No 2 could be controlled within stipulated criteria. The Japanese felt that the shape of Siyou No 2 was comparatively good and basically suited to machine harvesting, but that grain shedding characteristics required improvement.

Breeding objectives to meet the needs of mechanized harvesting are: First, efforts to surmount the proneness of xian rice to shed grain. Second is the need for plant shapes to be compact and not degenerate prematurely plus increase in thicknesses of leaves and rigidity of tissue, so that leaves will stand erect rather than droop and be suited to mechanical harvesting to reduce losses. Hybrid rice is already characterized by lack of proneness to lodging. Future efforts should be devoted to further breeding of good plant shape combinations not given to shed grain to meet the criteria of the modernization of agriculture.

4. Building of a hybrid rice seed production system with the specialization of seed production. How well the work of hybrid rice seed propagation and production is done directly affects the development and increases in yields of hybrid rice. In many places today, as a result of dispersal of propagation and no rigorous separation of lines, technical measures cannot be well carried out, with the result that seeds become mongrelized and regress, producing a phenomenon of "hybrid" without being "superior" in production. Surveys show a 5 to 10 percent mixing rate, which reaches 20 to 30 percent in more serious cases, as a result of which not only are increases in yields impossible, but decreases in yields result. This should arouse serious attention.

Modernized agriculture requires specialized production and farming of superior varieties, because of the strong tillering strength of hybrid rice, which means smaller quantities of seeds, extraordinarily fine conditions have been created for specialization in seeds. For the development of hybrid rice, it is necessary to establish a complete superior variety seed propagation system that specializes in production of seeds. Fulltime management teams and a specialized technical corps, centralized, integrated seed bases, and technical measures for constant upgrading of seed production under the enhanced leadership of agricultural departments, and best under the unified control of seed companies is necessary in order to do a truly fine job of seed work for hybrid rice.

Summarization of the experiences of all jurisdictions, and either seed propagation under the unified control of counties or with counties propagating and communes producing seeds is a rather good way at the present stage for the propagation and introduction to cultivation of hybrid rice. This would help enhance leadership, unify direction, implement technical measures, insure seed purity and quality, and increase total output. Currently some counties and communes are doing a fairly good job of centralized continuous seed production by making use of natural regions or natural separation, with communes providing unified management, unified operation, and unified supply of seeds, or signing contracts for supply and demand of seeds. Some have instituted fixed output at fixed quality with reqards for overfulfillment of quotas, which have played a great stimulating role. In future, it will be necessary to create representative summarizations of experiences, providing necessary support in manpower, finances, and materials in order to make the transition to specialized production operations to meet the needs of agricultural modernization.

In order to change rapidly the mongrelization of seeds, it is necessary, in addition to establishing a superior varieties propagation system, to take in hand purification of the three lines. The reason for mongrelization and regression of the three lines, apart from the mixing of pollen and mechanical mixing, is variations in the three lines themselves. Purification and rejuvenation of the three lines requires, in addition to attention to characteristics (breeding characteristics and economic characteristics), attention to other inherent factors, meaning the degree of sterility of the sterile-free line, the sterile-freeness of the sterile-free line, and the degree of restoration of the restorer line. Hybrid seeds bred from parent pairs that have been purified can increase yields by as much as 6.5 to 24 percent as compared with hybrid seeds that have not undergone purification, according to studies. All county agricultural institutes and superior variety farms must make purification of the three lines an important matter, renewing with all possible speed seeds for the "three lines" of hybrid rice cultivated over wide areas.

5. Intensification of basic theoretical research. Basic theoretical research on hybrid rice is currently extremely weak. Apart from some institutions of higher learning that conduct theoretical research, owing to limitations of manpower and equipment, agricultural research institutes do very little such work. Large numbers of problems raised in production require research in theories. Consequently, in future, research will have to be done on the major economic characteristics and genetic laws pertaining to disease resistance, and on the genetic mechanisms and forecasting of hybrid seed heterosis of the three lines in order to change limitations and blindness in breeding work for new combinations of three new lines and to increase predictability.

6. Intensification of research in farming techniques for high yields for further increases in yields. Per unit yields from existing hybrid rice combinations amount to as much as somewhat more than 1000 jin or as little as 500 to 600 jin, and a great potential for increased yields exists. With the intensification of research in farming techniques, further increase in per unit yields is very much possible. Research is needed from the propagation of seedlings, to close planting, to fertilizer and water management, with a summarization of a set of farming measures suited to local circumstances. Research should be done on dynamic growth criteria for different per unit yields in different places, and on structuaal models for output, thereby coordinating relationships between "granaries and sources." Research is also needed on the physiological and biochemical foundations for high yield cultivation, as well as research on techniques suited to mechanized farming.

7. Further strengthening of leadership to do a good job of cooperation. Thanks to the serious attention and support of CCP committees at all echelons, and the concerted efforts and teamwork of agricultural scientists and technicians in scientific research work on hybrid rice during the past several years, outstanding accomplishments have been made in the development of hybrid rice. But looked at in terms of the requirements of the modernization of agriculture, need exists for further strengthening of leadership, for an increase in research forces for hybrid rice growing, and for the replenishment of equipment and improvement in research techniques in order to bring to new levels scientific research on hybrid rice. Scientific research units everywhere should further strengthen cooperation, cooperatively divide up tasks under a unified plan, wage battle against hard problems, do reciprocal study, exchange information, make timely exchanges of materials, and do periodic summarizations of experiences to achieve breakthroughs in one area and results in all, whereby scientific research on hybrid rice will win greater accomplishments and make new contributions to the modernization of agriculture.

9432
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CADRES WARNED TO STOP USE OF FARMLAND FOR NEW HOUSING

Guangzhou NANFANG RIBAO in Chinese 18 Mar 81 p 1

[Article by reporter Ning Chuansheng [3942 0278 5116]: "The Serious Problem of New Housing Taking Over Farmland Must Be Solved Quickly"]

> [Text] Editor's Note: As seen from the situation in Zhanjiang Prefecture, it has become a very serious phenomenon that new housing freely occupies land for farming in some rural areas. Similar instances have also occurred in some other places. If this problem is not solved immediately, it will do very great harm to present agricultural production and to the coming generations.
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> To solve this problem, we must strengthen and improve leadership. The cadres at the grassroots level must be helped to understand that no units or individuals are allowed to illegally occupy, rent or buy and sell any part of the farmland of a production team, including private plots and hills permanently used by commune members. When a commune member wants land to build his house, his production team and commune must make a unified plan with the approval of all members. By doing this, first it will avoid the destruction of farmfields, and second it will beautify rural areas in a planned way. It has been proved by facts in many places that if we have the courage and are tactful in solving this problem by relying on the masses, the great majority of commune members will abide by the laws of the government and protect their collective interests, the few who try to build houses on farmlands will see the light and give up. Of course, if a very few people refuse to listen to our advice, we must take administrative measures to interfere and stop them. Cases of governmental offices, enterprises and persons taking over farmlands illegally will be handled strictly according to policy and the law.

Recently, during a trip to Zhanjiang Prefecture, we commonly saw in rural areas that some commune members were taking over collective paddyfields for the construction of houses and destroying farmlands. And this practice is still spreading. If it is not stopped in time, it will cause great harm to agricultural production.

Starting last year, commune members in Zhanjiang Prefecture have generally increased their economic income, and more and more of them have begun to build new houses. It is good that the masses have improved their living conditions; this is encouraging. However, in some places the houses are built on sites which were originally paddyfields and even high-yielding fields, so that farmland is becoming increasingly scarce, and this makes people worry. For instance, as of last year the Pingtang commune in Xinyi County had more than 1,600 households having built new houses on paddyfields, constituting 20 percent of the total number of its households, and having taken over more than 1,000 mu of paddyfields. Similar incidents have also occurred in other counties. Furthermore, some units and commune members used mud from high-yielding paddyfields to make bricks for building kilns, and thus destroyed the upper layer of soil for farming. For instance, last winter, in Sanjia commune in Yangchun County, 150 members of households in the Luocun production brigade built new houses by taking over 100 mu of paddyfields and also by using 200 mu of paddyfields to make mudbricks, thus destroying 25 percent of the total acreage of paddyfields of their production brigade. Some commune members who had no means of building new houses for the time being took over paddyfields to make mudbricks for sale. In a similar instance, more than 200 households in Gaozhou County destroyed over 100 mu of farmfields.

Moreover, in some counties and cities the state-run enterprises and units as well as individuals ignored the planning of urban construction departments, and privately gave to suburban production teams their building materials, machinery, equipment and goods for state procurement in exchange for paddyfields to build warehouses or dormitories. Others bought paddyfields from production teams at high prices. Last year, Zhanjiang and Maoming cities ignored the planning of urban construction departments and privately acquired more than 500 mu of paddyfields either by exchanging goods for fields or by purchase at high prices. These wrongdoings created a very bad impression and should be strictly prohibited.

There are many reasons for the occurrence of such instances of destroying farmfields. First of all, these people believed in anarchism, did not pay serious attention to the law, and freely built houses on farmfields which their production teams allotted to them under contract and for which they were responsible. Second, the party organs at the grassroots level of communes and production teams slackened their leadership over commune members in housing. Many cadres and commune members said that more and more people asked for permission to build new houses and the production teams had no unified plans, so the commune members built their houses wherever they chose to do so. Some cadres knew very well that it was wrong to take over paddyfields, but they did not have the courage to exercise control. Even though some cadres did refer the matter to the leadership at a higher level, the departments concerned often failed to make a decision and deal with such cases promptly. Third, some commune cadres ignored the consequences, cared about only immediate interests, and considered the blind destruction of farmfields for building kilns to make bricks and tiles as a way of making money.

The people of our province on the average have only a little over 0.8 mu of farmland each. If the phenomenon of destroying and taking over paddyfields is allowed to go on, the consequence will be hard to predict. Therefore, the broad masses of rural cadres and commune members are vigorously asking the people's governments at all levels to take effective measures to stop this unhealthy trend. They should not only teach the cadres and commune members to cherish farmfields but also reaffirm the principle that when building new houses the commune members should try their best not to take over farmland. Farmfields for which commune members have the responsiblity of production or of labor under contract are allotted to the contractors by their collectives; the contractors have only the right of cultivation and are not allowed to use the paddyfields for building houses. As quickly as possible we should conduct an investigation of houses and kilns built on paddyfields without proper approval, and deal with these cases according to the circumstances. For those commune members who have means of building new houses and have applied for land for this purpose, the production teams should make unified plans and handle their cases carefully and skillfully.

9039
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WAYS TO INCREASE TEA PRODUCTION IN PROVINCE DESCRIBED

Guangzhou NANFANG RIBAO in Chinese 20 Mar 81 p 2

[Article by Li Zongliang [2621 1350 0081], production office of Guangdong Province Department of Agriculture: "Several Proposals for Developing Tea Production in Guangdong Province"]

[Text] Tea is the major economic crop in the mountain areas in our province, and the conditions for the development of tea production there are very favorable. First, the climate is mild and humid, and the period for picking tea is long. (Tea may be picked all year round on Hainan Island, and the period of picking tea may last as much as 270 days a year in the mountain areas of northern Guangdong.) Second, the part of our province's vast hilly land has slightly acid soil, which is good for the growth of tea trees. Third, our province has a history of over a thousand years of making tea, and produces a number of famous varieties of tea known both at home and abroad, such as Fenghuang tea of Chaoan, Baimao Tea of Lechang, Qingliangshan green tea of Meixian, Gulao silver-needle of Gaohe, Bijia tea of Qingyuan, and black tea of Yinde and Hainan. Furthermore, our province borders on Hong Kong and Macao, and thus has the facility of export, can easily keep abreast of foreign markets trends, and so has vast prospects for the development of tea production.

Our province's annual output of tea increased from 30,000 dan just after liberation to 226,000 dan last year, which still falls far short of meeting the market demand. For instance, the sales volume of tea in the cities and towns in the province is 200,000 dan, but our province can only supply several tens of thousands of dan [the rest being required for shipment to other places.] Every year our province exports 80,000 dan of tea, which is only 0.5 percent of the tea trade volume of 16 million dan on the international market. Popular varieties on foreign markets such as oolong tea and broken black tea and very scarce. In the last 5 years, our province's annual output of tea has remained at about 200,000 dan, while the quantity of state procurement has decreased steadily, so that the difference between supply and demand has become increasingly great. It is a pressing matter at present to accelerate the pace of tea production.

How can the favorable conditions of our province be used for increasing our tea production quickly? We believe that the following measures may be considered as an answer:

1. Step up construction in countries of tea production base. Our province consists 70 percent of hilly lands, 10 percent of rivers and lakes, and 20 percent of farmlands. There are many hilly lands for tea cultivation. All places must include tea planting

in agricultural production plans, and in a planned way step by step must transform their hilly lands into tea gardens of high standard. To boost the marketing of tea, guarantees of funds and materials should be given to the 25 countries which have been classified as tea production bases so that they can gain production capabilities as quickly as possible.

2. Bring into play the might of policies, and arouse the enthusiasm of tea growers for production. The current prices of tea for procurement in our province are fixed according to the national scale of prices for various kinds of tea, however, our province has many economic crops, prices are high, the cost of tea production is more than 20 percent higher than that of other provinces, and the actual income of tea producing enterprises is very low. Furthermore, most tea producing areas are in remote mountain regions where foodgrain has always been in short supply, and the tea growers must exert great efforts to solve their food problem. For these reasons, it is quite common that the tea gardens are abandoned, the field management is extensive, or the cultivation is changed to other economic crops. We propose to duly raise the purchase prices of tea, reduce the tax rates on tea, and maintain the selling prices. At the same time, we should stimulate the tea growers' enthusiasm for production by restoring the bonus in grain for procuring surplus tea, giving them one jin of grain for one jin of tea.

3. Increase investments and loans for tea production, and give aid to communes with economic difficulties in mountain regions for developing tea gardens. The earning period of tea production is long and the output of tea is stable, so it is an important means for mountain areas to become rich. However, investment in the early period is large, many communes in mountain areas are short of funds and have no means of supporting the management of new tea gardens in the first few years. When the tea gardens come into operation, these communes are unable to build new factory buildings and get additional equipment. According to the statistics of the three counties of Yinde, Qingyuan and Yangshan, in the last 10 years they have abandoned 50,000 mu of new tea gardens because they could not afford to manage them. We propose to take the operation of tea producing countries such as India, Sri Lanka and Japan as an example and give aid to tea growers during the 3 years of the growth of tea saplings through subsidies or loans from the government.

4. Popularize scientific methods of planting tea, and tap potentials for increasing production. Our province has favorable natural conditions for the growth of tea; however, our yield of tea per mu ranks only seventh or eighth in the whole country; there still is great potential for increasing output. We propose to actively carry out research work on tea, energetically popularize the improved varieities of tea, and strengthen technological guidance. At the same time, we should use to advantage the special course on tea cultivation in the South China Institute of Agriculture and the training classes on tea production in various places, and step up the training of specialized personnel.

9039
CSO: 4007/335

GUANGDONG

LARGE INCREASES IN DISTRIBUTED INCOME TO BRIGADE MEMBERS REPORTED

Guangzhou NANFANG RIBAO in Chinese 14 Apr 81 p 1

[Article by Yang Dechuan [2799 1795 6898]: "Per Capita Distributions Exceed 300 Yuan in More than 700 Production Brigades in Guangdong Province; Third Plenary Session Policies Make Peasants Become Well Off Rapidly; Brigades Include 343 in Foshan Prefecture, 185 in Guangzhou Municipality, 140 in Huiyang Prefecture, 35 in Shenchuan Municipality, 17 in Zhuhai Municipality, Seven in Zhaoqing Prefecture, three in each of the Prefectures of Shantou, Shaoguan, and Hainan (Han Zone), and one in Zhanjiang"]

[Text] Distribution of rural commune earnings in Guangdong Province last year showed rather large increases. Statistics reveal that production brigades in the province with average per capita distributions of more than 300 yuan numbered 737, a 573 increase over the previous year, and representing 3 percent of the total number of brigades in the province. Six of these had per capita distributions of more than 1,000 yuan. In addition, two counties (or suburbs) had average per capita distributions of more than 300 yuan, namely Nanhai County with 325 yuan, and the suburbs of Foshan with 371 yuan.

These production brigades with average per capita distributions of more than 300 yuan were located not only in suburban areas, special economic zones and areas of economic crop concentrations, but also in grain producing areas, forest areas, semi-tropical economic crop areas, and hill areas. They included 343 people in Foshan Prefecture, 185 in Guangzhou Municipality, 140 in Huiyang, 35 in Shenchuan Municipality, 17 in Zhuhai Municipality, 7 in Zhaoqing Prefecture, 3 in each of Shantou Prefecture Shaoguan Prefecture, and Hainan (Han Zone), and 1 in Zhanjiang Prefecture. The emergence of these wealthy brigades is the result of their unswering implementation of the line, the policies, and the programs of the Third Plenary Session of the 11th Party Central Committee, their making the most of strengths while downplaying weaknesses, and making the most of advantages to enliven the rural economy. Specifically, the following serveral factors were mainly involved.

1. Across-the-board development of agriculture, forestry, animal husbandry, sideline occupations, and fisheries. In addition to doing a good job of agricultural production, Nanhai County made full use of the favorable circumstances of its proximity to Guangzhou, and Foshan, two large and medium size cities for vigorous development of its commune and brigade enterprises, particularly production team industrial sideline occupations. Last year gross income for people's communes throughout the county amounted to 338.7 million yuan, a 25 percent increase over the previous year. Of

the total, agricultural income amounted to 44.4 percent, industrial sideline occupations amounted to 38.6 percent, and forestry, animal husbandry, fisheries, and other industries amounted to 16 percent. Brigades in the province in which average per capita distributions amounted to more than 300 yuan numbered 130. This was 54.4 percent of the total number of brigades in the county.

2. Establishment and perfection of a system of responsibility for production, notably a system of responsibility linked to quantity of output, aroused the enthusiasm of commune members for doing a good job of collective production. Lianxing Production Brigade, Xinjiao Commune in suburban Guangzhou is a brigade devoted largely to production of vegetables in which industrial sideline occupations are also rather well developed. In last year's agricultural production by this brigade, most production teams instituted a system of responsibility contracting for net profits with teams and workforces. All brigade enterprises contracted with the brigade to pay profits, and within the enterprises themselves a system was instituted contracting output value or contracting net profits with teams or with individuals, or, in some cases, calculation of remuneration of piecework. Because of the strict system of responsibility, commune members strove to increase output of superior quality vegetables, used every possible means to expand opportunities for industrial sideline occupations, and strove to increase quantity of output, increase quality, and lower costs. Last year their gross income totaled more than 11 million yuan, and average distributions, were 951 yuan per capita.

3. In special economic areas, special policies and flexible measures were instituted. Once Shenchuan and Zhuhai municipalities had become special economic areas, acting in accordance with pertinent national policies, cadres and the masses opened broad avenues of production, launched small volume trade, and introduced foreign capital for joint operation of plants, thereby causing rapid growth of the collective economy and a rapid rise in the level of distributions. In 1978 grain output was only somewhat more than 200 jin per mu, and average per capita income was no more than 120 yuan. Following establishment of the special economic zones, they took advantage of their proximity to Hong Kong's New Territories to enter their joint operation, with appropriate units in Hong Kong, of a chicken farm with an annual output of 300,000 chickens and themselves operated five hog farms, using the Hong Kong market for the export of agricultural by-products. On top of this, last year's grain output increased 36 percent over 1979, and gross income for the brigade amounted to more than 1.8 million yuan, a towfold increase over 1979. Average per capita distributions to commune members amounted to 1,523 yuan, a 908 yuan increase over the previous year.

4. Establishment of a leadership group with emancipated mentality that understands how to do things, and is good at management. Peng Bai [1756 2672], secretary of the CCP branch of Donger Brigade, Pingzhou Commune in Nanhai County, is adept at management and administration. Since 1978, he has selected a group of people who understand policies, have a bent for economics, who possess rich experience in production, and who are good at management, putting them into production brigade and production team leadership teams. These leadership teams emancipated mentality and actively opened wide production avenues, promoted systems of responsibility for production linked to volume of output, and aroused the enthusiasm of commune members for intensive farming. Within 3 years, grain production increased by more than 1.3 million jin, and industrial sideline occupations were also able to produce goods that found a ready market in changing market conditions. Last year profits from such industrial occupations showed a more than twofold increase over 1977 for average per capita distrubutions of 340 yuan.

9432
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STATE FARM PROFITS ATTRIBUTED TO FINANCIAL INCENTIVES

Guangzhou NANFANG RIBAO in Chinese 13 Apr 81 p 1

[Article by Lan Haiqing [5695 3189 7230] and Li Sensheng [2621 2773 4141]: "Striking Results For State Farms Throughout the Province in Making Up Deficits and Increasing Surpluses; Fiscal Work Contracting Stirs Active Elements in Enterprises"]

[Text] Guangdong Province's state farms at the prefecture and county level have won striking results through diligent implementation of the programs and policies of the Central Committee for the development of agriculture, from institution of a system of fiscal contracting for work, from intensification of the management of enterprises, and from striving to make up deficits and increase surpluses. Gross output value last year increased by 24 percent as compared with 1979, and loss figures decreased by 87 percent.

Last year, fiscal departments and departments in charge at all levels diligently implemented pertinent regulations from the State Council, instituting fiscal contracting for work on state farms. In accordance with fiscal work contracting guidelines handed down by the state, when state farms increase surpluses and reduce deficits, they may retain increases, and when they reduce surpluses and increase deficits, no restitution will be made. Since the state has made clear the economic responsibilities of enterprises and enlarged the self-determination of enterprises, all enterprises have enhanced their economic accouting, seeking by all means to increase output and earnings, and devoting urgent attention to making up deficits and increasing surpluses.

Formerly, farms in Guangzhou Municipality and in Foshan Prefecture ran annual deficits totaling 100 million yuan, but after instituting fiscal contracting for work last year, they made up deficits and increased surpluses, realizing profits of 2.05 million and 2.3 million yuan respectively.

Conscientious strengthening of administration and management of farms at all echelons in Guangdong Province, and institution of a system of responsibility for production of "quotas, contracts, and rewards" has given great impetus to growth of production, and has layed a foundation for making up deficits and increasing surpluses. Last year, 80 percent of the farms instituted a system of responsibility for production that fixed output, output value, costs, and profits for production teams, teams, and individuals, and provided them awards for production in excess of quotas. This better implemented the principle of distributions in accordance with work, which aroused the enthusiasm of cadres and workers. After the Dongfang Hong [East is Red] Orchard in Hua County put into effect a system of responsibility for production worker enthusiasm for work was very high. They intensified care of the citrus fruit, and last year citrus output increased 1.7 fold. Yields rose from 1,000 jin per mu in 1979 to 3,277 jin per my. The whole farm made up deficits and increased surpluses, realizing profits of 127,000 yuan.

9432
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RICE TRANSPLANTING REPORTEDLY WELL ADVANCED DESPITE PREVIOUS INCLEMENT WEATHER

Guangzhou NANFANG RIBAO in Chinese 21 Apr 81 p 1

[Article by Nong Sheng [6593 3932]: "Guangdong Province Turns to Care of Fields As Rice Transplanting Ends; Early and Intensive Care of Seedlings to Win an Early Crop Bumper Harvest"]

[Text] Guangdon Province has finished the transplanting of rice, and has turned completely to care of the fields. Statistics as of 16 April show 25.4 million mu of early rice to have been transplanted throughout the province. This amounts to 87 percent of the planned quota with planting being done more quickly than during the same period last year on almost 1 million mu. It is estimated that by the time of "Guyu" (21 April), the planned transplanting of rice will have been completed except in mountain regions of northern Guangdong and in individual communes and brigades in Zhanjiang Prefecture. In addition, more spring crops have been planted than during the same period last year, and they are growing well. Because of adverse weather, in many places in Guangdong Province this year, early crop seedlings have frozen to death and resowing had to be done. As a result the time for transplanting seedlings was everywhere delayed by from 5 to 7 days as compared with last year. Nevertheless, as a result of the attention paid in all jurisdictions to stabilization of various forms of a system of responsibility for production, the enthusiasm of the broad masses of cadres and commune members was aroused. This plus the rather fine weather during March has caused all jurisdictions to make the most of this advantageous opportunity to rush plant, and to both tend the fields and transplant at the same time. In Shantou, Foshan, Zhaoqing, and Meixian prefectures, where field care was taken in hand rather early, numerous counties and communes convened on-side field care meetings during mid-April to promote advanced experiences, and to conduct mutual checking, evaluation, and comparison. Now Shantou Prefecture is cultivating and fertilizing for the first time its more than 1 million mu of ricefields, which amount to one-third of the area transplanted to rice. Of this total, the more than 300,000 mu of early rice has been cultivated and fertilized twice. Sanshui County in Foshan Prefecture has changed its past practice of finishing transplanting seedlings before giving attention to field care. It is now tending the fields and transplanting at the same time, and seedlings are growing rapidly and developing quickly.

In caring for the fields, all locales are extremely mindful of the early arrival this year of the rainy season and of the possibility that bad weather in the form of typhoons may arrive early this year too. They have diligently intensified early season care, early fertilization, and early airing and sunning of the fields to control ineffective tillering, to permit seedlings to grow more sturdily, and to increase capacity to resist lodging and withstand diseases and insect pests. All counties in Guangzhou Municipality have organized agriculutural scientists to go to each commune and brigade to spread scientific knowledge about field care among the peasantry and to increase the level of scientific farming. While doing everything possible to look after the rice fields, they are also giving attention to intensification of care of spring-sown crops to win an all-around bumper harvest in agriculture.

9432
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WAYS TO INCREASE PRODUCTION BRIGADE ENTERPRISES' EFFICIENCY, PROFITS EXPLORED

Guangzhou NANFANG RIBAO in Chinese 9 May 81 p 1

[Article: "Guangdong Province Commune and Brigade Enterprise Earnings Last Year Topped 4 Billion Yuan; All Jurisdictions Determined to Continue Making Most of Advantages, Implement State Economic Readjustment Programs, Actively and Steadily Do a Good Job of Operating Commune and Brigade Enterprises, and Hasten Progress Toward Making Rural Villages Wealthy."]

[Text] As a result of 2 years of readjustment of commune and brigade enterprises in Guangdong Province, the structure of these industries is now gradually tending toward rationality, most products find ready markets, and a tremendous increase has occurred in the labor productivity rate. Recent verifications shows last year's gross earnings for commune and brigade enterprises in the province to have been more than 4.165 billion yuan, a 24.6 percent increase over 1979. Profits amounted to more than 630 million yuan, and revenues paid the state amounted to more than 150 million yuan, increases over the previous year of 22 percent and 12.6 percent respectively. Recently, the provincial commune and brigade enterprises system convened a meeting of prefecture and municipal bureau directors in Foshan City to summarize and exchange experiences to resolve to continue to make the most of Guangdong Province's advantages, to implement state economic readjustment programs, and to actively and steadily do a good job of operating commune and brigade enterprises so that the broad masses of peasants will become well off with all possible speed.

Reports from all jurisdictions show the current major problem existing in commune and brigade enterprises to be: 1. Some places are not doing a very vigorous job of readjustment. Matters requiring readjustment have not been readjusted well, and matters requiring development have not been developed with determination. Production still languishes in a passive state. 2. In the use of profits by some brigades, production teams and commune members have received skimpy economic benefits. 3. Growth is very unbalanced. Some top-notch units have emerged in the province, such as Shunde County's commune and brigade enterprises where gross income has topped 300 million yuan, Guanzhou Commune in Shunde County whose gross earnings have topped 50 million yuan, and Yongning Production Brigade in Zhongshan County whose earnings have topped 10 million yuan, while gross earnings in other counties (and municipalities) have been only 1 million yuan. 4. In some enterprises, administration is not good, and management is rather confused. 5. In some hardship prefectures, after institution of contracts for output and contracts for specific jobs in the fields, investigation and summarization of how to operate commune and brigade enterprises in accordance with realities is still lacking.

In summarizing and exchanging the advanced experiences of each jurisdiction, the conference analyzed Guangdong Province's strengths, concluding that if there was to be continued steady growth in the commune and brigade enterprises during the course of readjustment, the following measures would have to receive attention:

1. Mastery of commune and brigade enterprises characteristics with active implementation of readjustment enterprises. Commune and brigade enterprises are implementing a combination of planned readjustment and market readjustment in a program in which market readjustments are dominant. Readjustment of commune and brigade enterprises is economic, and the characteristic of "the smaller the boat the more quickly it can turn," should be brought into play in active attention to readjustment work. In Nanhai, Panyu, and Shunde counties where the proportion of mechanized processing industries is large, attention was turned last year to active readjustment with a prompt turn around of production in a process of heavy being converted to light (industry), old being converted to new (products), the low being converted to high (grades), and the few to the many (varieties). This enlivened operation of the enterprises. In these several counties, commune and brigade enterprises gross earning last year increased by more than 20 percent over 1979.

2. Active operation of integrated enterprises and enterprises operated by production teams so that the peasants directly obtain material benefits. According to incomplete statistics, 1,355 integrated enterprises are in operation throughout the province. Production team operated industrial enterprises in the province last year totaled 14,672 with a gross income of more than 270 million yuan, which played a definite role in directly increasing distributions to the peasants. Henceforth, in places where a definite basis exists for commune and brigade operation of enterprises, emphasis should be given to integrated enterprises and enterprises operated by production teams. Operation of integrated enterprises should begin with the internal integration of existing commune and brigade enterprises, with gradual expansion to integration with external enterprises. In the operation of integrated enterprises, production teams should be the foundation with maintenance of the principles of voluntary participation and mutual benefit and the "three no changes" (no change in ownership, no change in economic accounting, no change in subordination relationships), and institution of democratic management whereby the peasants will directly receive economic benefits. Existing commune and brigade enterprises can use pilot projects for gradual changes in their system of organization. They can convert the enterprises' workforce, capital, and fixed assets to shares and integrate with production teams, dividing profits in accordance with shares, setting up "shares committees," and instituting democratic management, establishing commune and brigade enterprises on the foundation of production team integration.

3. Make the most of the advantage of proximity to Hong Kong and Macao to develop the export of goods and "three incomings with one compensation" (incoming goods for processing, incoming parts for assembly, incoming samples for processing, and compensatory trade) occupations. Last year, gross income from the province's commune and brigade enterprises' export trade came to 620 million yuan, amounting to 15 percent of commune and brigade enterprise gross income, a 92 percent increase over the previous year. This year it is intended that foreign trade will be even more lively than last year. Overall consideration taking all factors into consideration is to be given items brought in, with arrangements being made to have the echelon of enterprise most able to do the production actually do the production in order to expand operations.

4. Improvement in administration and management, increase in the production level of enterprises, and increase in the competitiveness of products. Commune operated enterprises in Guizhou Commune, Shunde County last year promoted a system of responsibility for production of "five quotas and one reward," which aroused the enthusiasm of workers. Gross output value doubled; profits increased twofold; revenues paid the state slightly more than doubled, and output value and profits created by the workers increased by an average 95 and 92.8 percent respectively. This example demonstrates that solution to the current problems of generally low rate of labor productivity and low profit rate requires starting with improvement in administration and management, and through independent accounting and responsibility for ones own profits and losses, link the material benefits of workers to how well the enterprises are run, and how great individual contribitions.

9432
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THIRTY-NINE COUNTIES ENGAGE IN AGRICULTURAL ZONING WORK

Guangzhou NANFANG RIBAO in Chinese 13 May 81 p 1

[Article by Liu Baijin [0491 2672 6210]: "Put Agricultural Growth On a Scientific Foundation; Thirty-nine Counties in the Province Begin Agricultural Resources Survey and Zoning Work"]

[Text] Beginning last September, 39 counties in Guangdong Province began agricultural resources survey and zoning work. As of now, 24 of the counties have completed field surveys and have entered the stage of collating and analyzing data. The remaining 15 counties will shortly complete their field surveys.

Survey of agricultural resources and agricultural zoning are tasks indispensable to rational use of natural resources, for making fullest use of regional advantages for agricultural production, and for all around development of agriculture, forestry, animal husbandry, sideline occupations, and the fishing industry. In Guangdong Province, CCP committees and the government at all echelons have placed this work on their agendas and have made real improvements in its leadership. All prefectures, municipalities, and counties involved in this work have set up agricultural zoning committees. Relevant departments and scientific research units directly subordinate to the province have also set up special organizations. The province, each prefecture, and each county concerned have also alloted special funds in the amount of somewhat more than 1.5 million yuan. Gaoyao County has transferred more than 130 cadres and scientists and technicians from relavent units in the county to this work. Begun at the end of October last year, within 101 days time field survey work for the entire county was completed.

Survey of agricultural resources and agricultural zoning work covers a broad area and requires a vast amount of work. In undertaking this work, each county relies on local forces, puts to use existing scientists and technicians, and provides technical training. In complete statistics show participation of more than 24,200 cadres, scientists and technicians, and the masses in surveying work in 39 counties. Of this total, 460 main force cadres have been trained by relevant provincial units, and more than 3,900 people have been trained by prefectures and counties.

In the process of undertaking resources survey and zoing work, each county gives attention to requirements for the development of agricultural production, and while keeping their eyes on the future maintain their feet in the present, combining survey, zoning, and application of results. Luokeng Commune in Xinhui County summarized and promoted the experiences of the commune's Chehu Production Team in making rational use of soil resources, exploiting strengths and avoiding weaknesses to go from poverty to riches. The more than 27,000 mu of cultivated land and the 50,000 mu of mountainland in the commune were planned out, and an optimum program for land utilization was decided upon. As a result of a resources survey, Ledong County came to understand in an overall way the soil, water, agricultural climate and biological resources of the entire county. It then readjusted the former irrational pattern of production. Before spring farming got underway this year, seven counties in Foshan Prefecture that are involved in zoning work concentrated manpower and material resources to make a general soil survey, completing on time the chemical testing and analysis of various quick reacting nutrients in soil samples and in the cultivated layer. This provided scientific data for planting in accordance with local conditions, and fertilizing in accordance with the needs of the soil to win high yields from the early crop this year. The masses are very satisfied with this, calling the soil survey teams, "soil changing teams," and "field doctors."

9432
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BRIEFS

STATE FARM PRODUCTION--The state farm and land reclamation system in Guangdong made steady progress in production in 1980 despite natural disasters. Its state-assigned production quotas were fulfilled as follows: dry rubber 100.6 percent, tea 124.6 percent, sugarcane 166.7 percent. Its production of coffee, pepper, lemongrass and live pigs also made new progress. The profits it turned over to the state amounted to 110 million yuan for that year. [Beijing ZHONGGUO NONGKEN No 3, 24 Mar 1981 p 8]

CSO: 4007/442

HEBEI

BENEFIT, PROCEDURES OF STRIP FARMING OF CORN OUTLINED

Shijiazhuang HEBEI RIBAO in Chinese 1 May 81 p 2

[Article from Funing County Agricultural Bureau: "Some Learning Experiences From the Strip Farming of Corn"]

[Text] Strip-farmed corn is one of the major ways of planting corn in Funing County. In 1980, the county had about 100,000 mu of strip-farmed corn, for average yields of somewhat more than 750 jin per mu. Individual plots produced more than 1,200 jin per mu.

Strip-farmed corn's ability to increase yields in Funing County may be attributed largely to solution of the following four conflicts.

First is solution to the conflict between the short frost-free season and the insufficient quantity of heat for the growing of two crops in a single year. Funing's frost-free period is about 170 days, and annual accumulated temperatures are 4234.6°C. If two crops are grown one after another (on flat land), wheat will require 2239.5°C, and summer corn will require 2300°C, so the amount of heat is not sufficient. Not only will a problem of summer increase and autumn decrease occur for that year, but this will lead inevitably to a vicious cycle for subsequent production. In the strip farming of corn, however, the corn sown in early May and ripens in mid-September. The corn is sown 40 to 50 days earlier than summer corn would be, so not only is it able to use 850-1060°C of accumulated heat during its seedling stage, but the entire period of corn growth occurs during the period of high temperatures, which helps boost corn yields.

Second is solution to the conflict of mutual competition for light during the growth period of the two interplanted crops. Strip fields are divided into two strips: a strip for wheat and a backing strip. In Funing County, most commonly the total width of a strip is 4.5 chi with the wheat strip being 2.3 chi wide, and the backing strip being 2.2 chi wide and about 2 cun higher than the wheat strip. Corn is planted in two rows on the backing strip, 6 cun apart. The corn is 8 cun from the wheat. Because the backing strip is wide, and because of the upper and lower strip arrangement, the corn is little affected during its seedling stage by the wheat, while both crops may be fertilized and otherwise cared for during their common periods of growth, making possible the growth of sturdy plants.

Third is solution to the conflict between the laws governing rainfall and the corn's need for water. In Funing County, the rainfall pattern is spring drought, summer flooding, and autumn shortage of rain. Normal annual rainfall measures somewhat more than 750 millimeters with rainfall during July and August amounting to about 60 percent of the annual total. Irrigation of the wheat at its jointing and booting stages, before the corn has been planted, creates excellent moisture conditions for the corn. Once the corn has been fertilized, the time is ripe for irrigating the wheat when it is coming into milk or ripening, thereby watering in the fertilizer. During mid or late July, when the corn is beginning to tassel and spread pollen, the raining season begins and is able to satisfy the corn's needs for water. After mid to late August, rainfall decreases and sunshine is copious, which helps the corn come into milk. When dry weather occurs, the cornfields may be watered.

Fourth is solution to the conflict during the period of the "three summer work tasks" when there is a lot of farm work to be done and a shortage of draft animals to do it. Formerly, the "three summer work tasks" of summer harvest, sowing, and field care all came at once. Everything was hectic and frequently things did not get done as a result. After strip farming and intercropping began, with the earlier planting of corn, the "three summer work tasks" became "two summer work tasks," with summer sowing becoming spring sowing. It became possible to concentrate manpower for summer harvest and summer field care.

Strip farming of corn requires a fair amount of skill. It requires intensive care at certain stages for the sowing of seeds, protection of seedlings, elimination of insect pests, and the prevention of lodging.

During the stage of common growth with the wheat, care requirements for strip-farmed corn take the form of "four earlys," early singling of seedlings, early cultivation, early fertilization, and early treatment for insects. Once the wheat has been harvested, the strip-farmed corn is "emancipated," and care consists of "four urgents," urgent removal of wheat stubble, urgent fertilization, urgent watering, and urgent hoeing. On the basis of the knowledge we have acquired through experience during the past several years, overall, the following six key actions should be taken in particular.

First, maintain strip field standards. Make some satisfactory arrangement about the ratio of wheat to corn. In a 4.5 chi wide strip field in which wheat takes up 2.3 chi, either six rows of machine-sown wheat or four rows of wheat sown using oxen may be planted. On the 2.2 chi backing strip, two rows of corn may be planted. This method holds advantages for both crops. During its early stages of growth, the wheat is dominant, and after the wheat has been harvested, the corn forms a large swath through which the air can circulate and light penetrate. Secondly, since the backing strip is about 2 cun higher than the wheat strip, this is actually ridge culturing of corn, and when watering is done, this backing strip serves as a ridge along which the water runs. During winter, it acts as a windbreak for the wheat and protects the soil. When the wheat is watered, however, the corn seedlings are not flooded, and during the rainy season, water can be easily drained away from the corn to prevent waterlogging. Third, a planting system of a tight inside and a loose outside is used for the corn, meaning that the distance between corn stalks in the two rows is 6 cun while the distance of the corn from the wheat is 8 cun. This planting system makes for protection of the seedlings and few losses, and since the seedlings are not crowded together, they grow well, and have numerous ears with numerous kernels that are well filled out.

Second is planting on time. Overly early interplanting is helpful, of course, in taking advantage of the accumulated temperatures of the spring season, but the period of common growth for the two crops will be overly long, and if the corn seedlings are seriously crowded, their development will not be good. Interplanting too late, though good for the young corn seedlings, wastes heat and the growing season, and also bears on the problem of planting the succeeding crop of wheat. On the basis of several years observations in Funing County of the time for planting corn, early May seems most suitable. Corn has a 122 day growing season during which it will grow during the same period as wheat for 48 days from the time it is sown, and for 40 days from the time it sprouts. During the period when both crops are growing together, the corn grows normally, but once the wheat has been harvested, it enters the stage of prolific growth. Its tasseling and blossoming period coincides with the rainy season, and before it ripens, it has a period of copious sunshine. Before another crop of wheat has been planted, it ripens and is harvested. Time is available to clear the fields. Therefore, sowing in early May is advantageous for both the corn and the wheat crop.

Third is assured density. Strip-farmed corn must have a sufficient number of plants to assure a sufficient number of ears to assure output. Density of planting depends on soil fertility, adaptations being made to suit local situations. The results of our experiences are as follows: In areas with high fertility and large amounts of water where corn yields are around 1000 jin per mu, density can be in the neighborhood of from 2,700 to 3,300 plants per mu. Corn output will increase as density increases. However, once density is greater than 3,500 plants, decline in output tends to set in. In general, for each 100 plant increase, output declines by 9.3 jin. In Funing County, density of planting of Zhongdan No 2 hybrid in most strip-farmed fields with plants spaced from 8 to 8.5 cun apart is 3,100 to 3,300 plants per mu, with plants from which corn is harvested numbering about 3,100. For Danyu No 6 with plants spaced from 7.5 to 8 cun apart, between 3,300 and 3,500 plants per mu are grown with the harvest coming from about 3,200 plants.

Fourth is sensible fertilization. The way we do it is to make heavy applications of base fertilizer with periodic top dressings. By heavy applications of fertilizer is meant that in addition to the use of crude fertilizer when the soil is plowed in the fall to plant wheat, further application of between 5000 and 6000 jin of crude fertilizer is made around the time that the wheat begins to green up in the spring. The procedure is as follows: Plow a furrow along the middle of the backing strip; put the crude fertilizer in it, and cover it up. The masses call this "ditch-warming fertilizer." At planting time, use a hoe to open a trench on each side of the "ditch-warming fertilizer" and plant the seeds in it at the intended distance apart, and then put some chemical fertilizer in the space between each seed. Usually 30 jin of ammonium carbonate per mu, and 50 jin of potash mixed together will be required. A combination of crude fertilizer, nitrogenous fertilizer, and potash fertilizer as a base fertilizer forms the foundation for the growing of sturdy seedlings. Periodic fertilization is usually done in mid-June when the corn has developed six or seven leaves and jointing fertilizer is applied. Between 40 and 50 jin per mu of ammonium carbonate is applied. Little holes are dug, the fertilizer put in and covered. This should be accompanied with irrigation of the wheat for its ripening stage, so the fertilizer will be watered in to the corn. During early July when the corn is in full flower, booting stage fertilizer should be applied. Between 60 and 70 jin per mu of ammonium carbonate should be applied, this also in small holes that have been dug and then covered. If no rain falls after application, the corn should be irrigated.

Fifth, use of superior varieties. Strip-farmed field corn is an intermediate crop between two crops of wheat, which cannot interfere with the first wheat crop nor delay planting of the second one. Therefore, it is necessary to use highly disease resistant, early maturing, high output, and good quality mid-season hybrid varieties. During 1980, comparison of 13 corn hybrids (or combinations) were conducted at 22 production brigade farms throughout the county. Potential for increased yields was fairly great for Xu 052 x Tang 222, which had ranked first in 1979. Its shortcoming was a growth period of from 3 to 5 days longer than that of Zhongdan No 2, and its ability to withstanding lodging was not as good as that of Zhongdan No 2. It could be used as a matching variety to a dominant variety in open field plantings. Zhongdan No 2 was strongly resistant, produced consistently high yields, matured fairly early, and had good quality grain. It was rather well suited to strip-farming in Funing County, and has been promoted as the dominant variety.

Sixth is prevention and control of insect pests.

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ANTI-DROUGHT MEASURES IN HANDAN PREFECTURE

Shijiazhuang HEBEI RIBAO in Chinese 2 May 81 p 1

[Article Collated From Reports From the Handan Prefecture CCP Committee and Provincial Administrative Offices: "Handan Prefecture Takes Seven Actions To Do Its Best in 'One Resistance and Two Protections'"]

[Text] Faced with a serious drought, the Handan Prefecture CCP Committee and provincial administrative offices are actively leading rural cadres and the masses throughout the prefecture to tap potential for fighting drought, using every available means to preserve a bumper wheat harvest and protect the sowing of cotton. They are currently taking the following seven actions:

1. Further enhancing and improving various forms of a system of responsibility for production, relying on government policies to arouse mass initiative to combat drought. Throughout the prefecture, 57.3 percent of all production teams have gone in for linking wheat production to labor. More than 300,000 mu of non-irrigated wheatland, 900,000 mu of fields not plowed after the last harvest, and 330,000 mu of scattered parcels and out of the way plots have been "double contracted" to households. The prefecture's 2,035 cotton growing production teams have instituted systems of responsibility in which the 18,546 contracts for specialized production, contracts linking output to labor, and contracting for the completion of work amounts to 92 percent. This has stimulated both the collective and individual commune members to fight drought and win a bumper harvest.

2. They have adopted the method of walking on two legs by the collective and commune members for an active pooling of funds to combat drought. The prefecture's communes and brigades have collectively contributed 15.26 million yuan, and individual commune members have collected 2,612,000 yuan, the two sums totaling 17,872,000 yuan. The purchase of 344 diesel engines, 798 electric motors, 2,014 water pumps, the erection of 528 kilometers of high and low voltage power lines, and the purchase of 308 transformers has played a very great role in the "one resistance and two protections."

3. Use of every available means to tap the potential of pump wells to expand the irrigated area. They have devoted attention to seven major things. First a system of responsibility for management and use of pump wells. Second, attention to large-scale repairs of ailing and broken pump wells, and to the installation of pumps and

allocation of deep well pumps. Third, attention to wheatfields lacking wells or having few wells, and the sinking and fitting out of wells in cotton fields. Fourth, use of indigenous and foreign methods to expand water resources in the spirit of an irrigated mu is a mu, and 1/10 of an irrigated mu is 1/10 of a mu. Fifth is attention to machinery repair. Long use in the fight against drought, plus improper management has caused substantial damage to diesel engines. In order to keep machines and tools in running order, more than 19,000 diesel engines have already been rush repaired, and management of them strengthened. Sixth is attention to cooperation. Breaking down the brigade boundaries, commune boundaries, and county boundaries for mutual borrowing of wells to water fields, so that those with numerous water resources can help those with scant water resources. Seventh is attention to "minimizing" use of electricity. During the day, mostly machines are used to irrigate fields, and at night mostly electricity is used to irrigate fields. The electricity load rate for the prefecture is steadily rising. In the five counties of Feixiang, Jize, Jiuxian, Guangping, and Wuan, the load rate already stands at more than 90 percent.

4. In the people's war against drought, carts haul and people carry; watering is withheld and seeds are dibbled. Even with maximum efforts, only 1.15 million mu of the prefecture's 1.6 million mu of cotton fields can be watered; for the remaining 450,000 mu there are no water resources. Consequently, they have roused communes and brigades to use carts and people to carry water, and to dibble seeds into the ground. Additionally, it is planned to dibble seeds for the 970,000 mu grain crop. In order to assure planting on time of spring grain on 150,000 mu of non-irrigated land and cotton on 90,000 mu of non-irrigated land, Wuan County organized 200,000 people, 80 vehicles, 1000 tractors, and 10,000 horsecarts to haul water for the dibbling of seeds. Earlier this county had mixed water with human feces and urine to water 80,000 mu of wheatlands.

5. Cadres have contracted for tracts, contracted with communes and brigades, and have contracted for machines at wells to water the land. In addition to the more than 7000 cadres formerly transferred to the countryside, another more than 2000 were recently transferred, so now the prefecture has almost 10,000 cadres battling on the front line against drought. The Prefecture CCP Committee, and provincial administrative office assistant directors have divided up tasks for contracting with counties; county CCP committees and deputy county heads have contracted with communes; commune cadres have contracted with production brigades; production brigade cadres have contracted with teams, and cadres have contracted for machines at wells.

6. Readjustment of crop patterns, expanded planting of drought resistant crops. Ci County is preparing to retrench 10,000 mu of rice and expand the planting of crops that tolerate drought. Sweet potatoes, which last year covered 20,000 mu, are being readied for planting this year on 50,000 mu. Millet will go from last year's 10,000 mu to 30,000 mu. Wuan County has changed from the planting of a large amount of corn to large amounts of millet and sweet potatoes. They plan to plant 100,000 mu of sweet potatoes and 240,000 mu of millet, more than 30,000 mu more of each than last year.

7. Organization of every trade and every industry in support to fight a total war. Commercial and supply and marketing departments have launched an inventory and inspection of warehouses for machines useful in fighting the drought, and have sold

them on credit in an active effort to put them in place in the countryside. Incomplete statistics show that the prefecture has sent to the countryside 3,033 semi-mechanized water-raising devices, more than 26,000 water buckets, and 11,365 diesel engines. It has also organized more than 500 teams to help agriculture by going from village to village and brigade to brigade to solve problems. Farm machine units have organized 256 repair teams, which have already overhauled 19,000 diesel engines.

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HEBEI

BRIEFS

STRIP FARMING IN FUNING COUNTY--Funing County's strip farming methods are one kind of scientific farming. Their summarized experiences merit study everywhere for the application of general methods to local situations and for promotion. This county's strip farming method consists of 4.5 chi wide strips, 2.3 chi of which is planted to wheat and 2.2 chi of which (on both sides) is planted to corn. Without waiting for the wheat to be harvested, the corn is planted in early May, 40 to 50 days earlier than corn sown in summer. In this way the corn gets from 840°C to 1,060°C of accumulated temperatures during its seedling stage. By the time the wheat is harvested, the corn has already grown 1 meter or so, and the accumulated coefficient of the leaves has already reached 0.91 to 1.61. Thus, before the late frost arrives, the corn may be cut ahead of schedule for a bumper harvest. So, it is said that this farming method accords with scientific principles. By farming this way, does the reduction in wheat acreage cause a reduction in wheat output? Funing County's experiences provide the answer. In 1980, the county's wheat yields averaged 198 jin per mu, while yields from strip farming averaged 264.7 jin per mu. Despite reduction in the wheat acreage, it was still possible to win high yields. Why was that? The Funing County Forestry Bureau's summarized experiences dialectically employ facts to provide the answer, and this is is also very helpful in eradicating metaphysical ideology. Because of the reduction in the number of cornstalks by farming this way, is there a reduction in output? The answer of experience is not only is there no reduction in output, but rather a great increase in output. Additionally, there is yet another matter not raised in Funing County's experiences, namely that when doing strip farming, it is still possible to do interplanting, specifically the interplanting of soybeans for harvests of from 40 to 80 jin per mu, or much more than a million jin of soybeans for the whole province. Thus, in strip farming, or in any other form of farming, this method may be used. In carrying out a system of responsibility linking remuneration to output and letting specialized contracts, by all means make this a part of the contracts, and then Hebei Province will have a fine harvest. [Text] [Shijiazhuang HEBEI RIBAO in Chinese 1 May 81 p 2] 9432

RURAL ECONOMY IMPROVED IN TIANJIN--Income and expenditure figures for rural communes in Tianjin Municipality for 1980 have been tallied as follow: compared with 1979, total collective grain output rose 0.22 percent; grain delivered or sold to the State went up 26.5 percent; total income up 2 percent; collective reserves up 0.9 percent; per capita provisions up 5.14 percent; per capita distribution of income up 7.4 percent; the proportion of total expenditure to total income down 1.7 percent; and the amount of money overdrawn by commune members dropped 1.4 percent. [Tianjin TIANJIN RIBAO in Chinese 21 Apr 81 p 1]

CSO: 4007/442

BREEDING OF HIGH YIELD EARLY MATURING COLD RESISTANT VARIETIES CLAIMED

Beijing GUANGMING RIBAO in Chinese 3 Jun 81 p 2

[Article by Zheng Xiaofeng [6774 4562 2800]: "Heilongjiang Province Breeds a Group of Early Ripening High Yield Varieties to Triumph Over Low Temperature and Cold Damage, Increasing Grain Output"]

[Text] In order to combat frequent low temperatures and early frost that frequently damages grain crops in frigid regions, and to preserve consistently high outputs in agriculture, after many years effort agricultural scientists and technicians in Heilongjiang Province have successfully bred and extended to cultivation 36 new varieties of the six major crops including corn, gaoliang, soybeans, millet, wheat, and rice, thereby making a contribution to increases in total grain output.

The reduced output occasioned by low temperatures and freeze damage poses a serious threat to growth of agriculture in Heilongjiang Province. Both the Heilongjiang Provincial CCP Committee and the National Science Commission are extremely interested in the breeding of superior varieties able to withstand low temperatures and cold damage. In 1977, this project was made a major national scientific research project handed to the Heilongjiang Provincial Science Commission. In addition, experts, professors and agricultural scientists and technicians from the Provincial Academy of Agricultural Sciences, the State Farm Administration, and institutions of higher learning were organized to launch a coordinated assault on the problem. Following many years of effort, the breeding of new varieties of major agricultural crops made a heartening breakthrough. Testing has shown that the single hybrid corn, "Longdan No 1" bred by the Breeding Institute of the Provincial Academy of Agricultural Sciences has rather strong ability to withstand natural calamities. "Longgu No 24 millet bred by this institute averages yields of 1906 jin per mu, making possible a change from low yields to high yields in a single stroke. New soybean varieties bred by Nenjiang Agricultural Institute and Suihya Agricultural Institute are characterized by strong stems, resistance to drought, tolerance of cold, and resistance to waterlogging, and increase yields by 16.6 or 18 percent respectively as compared with control varieties. Following more than 3 years of testing, "Hejiang No 20" rice bred by the Hejiang Rice Institute produced maximum yields of more than 1000 jin per mu. It is now being promoted in eastern regions of Heilongjiang Province where it has become the region's most planted variety. In response to the objective of breeding early ripening high yield varieties, the experts bred 98 prospective new varieties and new combinations, all of which regional testing showed to possess characteristics of early ripening, increased yields, and strong resistances.

In the Process of selecting new types of early ripening high yield varieties, the numerous agricultural scientists and technicians diligently and meticulously introduced from at home and abroad more than 1200 varieties of corn, soybeans, wheat, millet, and gaoliang, and collected 512 different ecological type wild and semi-wild soybean specimens. After examination and evaluation, they came to understand a large number of excellent genetic germ plasms, establishing a material basis for the breeding of new varieties. In order to gather accurate experimental data, the experts went to the various test sites at different seasons to do field design work, investigate breeding, and analyze output statistics. They also combined breeding work experiences to launch wide ranging research into the theoretical foundations underlying early maturing and high yield breeding, writing some research treatises and research reports thereon.

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BRIEFS

EXPERIMENT WITH AERIAL SPRAYING OF FERTILIZER--Hubei is using aircraft to spray fertilizer on leaves of wheat plants. This new experiment was tried out for the first time in Hubei between April 8 and 12 this year in 80 sorties over 30,000 mu of wheat fields in 17 communes in Guanghua and Gucheng counties. Thirty-five observation stations have been set up to observe and study the result of this experiment. [Wuhan HUBEI RIBAO in Chinese 13 Apr 81 p 1]

PRIVATE PLOTS TO BE EXTENDED--The head of the Jingzhou Prefecture party committee announced at a meeting attended by all county-level party secretaries in the prefecture on 9 April that the prefectural party committee had decided to assign additional private plots and fodder plots to commune members in accordance with the stipulation of policies of the central authorities and the provincial party committee. With the additional allotments, these plots may amount to 12-15 percent of the total local cultivated areas. The additional allotments should be made right away if possible or after autumn this year. [Wuhan HUBEI RIBAO in Chinese 18 Apr 81 p 1]

CSO: 4007/442

JIANGSU

BRIEFS

POTENTIAL OF HIGHER FISH PRODUCTION--Located in the lower reaches of Changjiang and Huai He, Jiangsu has more than 26 million mu of water surface, of which more than 5.8 million mu are suited to raising fish. Last year the output of fresh water fish reached 105,390 tons, or 9 times that of the early post-liberation period. However, Jiangsu still has not utilized 1.9 million mu of water surface available for and suited to fish raising, and the per-unit yield of those water surfaces now being utilized is still relatively low. The potential of increasing fresh water fish output is great provided correct measures are carried out. [Nanjing XINHUA RIBAO in Chinese 19 Mar 81 p 2]

BAD WEATHER DAMAGES COTTON SEEDLINGS--Due to recent cloudy, rainy and cold weather, the seeds on 1.6 million mu of cotton fields in Nantong Prefecture of Jiangsu are not germinating well. In the past few days, some 600,000 cadres and peasants have been inspecting cotton seedlings in the rain and taking measures to strengthen field management and to replant those fields having rotten seeds or seedlings. [Nanjing XINHUA RIBAO in Chinese 13 Apr 81 p 1]

PROFIT OF FARMS INCREASED--In 1980 the 428 state-operated agricultural/forest farms under the agricultural/forestry system of Jiangsu made a net profit of 12.37 million yuan, which was more than twice that of 1979, the year in which these farms managed to achieve a profit instead of having a loss. [Nanjing XINHUA RIBAO in Chinese 24 Mar 81 p 1]

WHEAT FIELDS WATERED--With the spring drought continuing, Xuzhou Prefecture of Jiangsu has launched a wheat field management drive stressing watering of the wheat crop for it to green up. As of 25 March, over 2.84 million mu of wheat were watered once. This represents 50 percent of the prefecture's wheat fields for which water is avialable. [Nanjing XINHUA RIBAO in Chinese 27 Mar 81 p 1]

PIGS IN JIANGSU--Jiangsu raised more pigs in 1980 than in 1979. In 1980, the rate of live pigs moving out of inventory rose 5 percent, and the number of live pigs procured by the state went up 2.74 million, or almost twice the average annual figure of the 70's. Since last winter and this spring, however, the number of pigs in inventory, the number of pigs raised by the collective, and the number of sows being raised all have dropped. This has caused concern in the leadership, and measures have been taken to improve the situation. [Nanjing XINHUA RIBAO in Chinese 17 Mar 81 p 1]

JIANGSU SETS 1981 PRODUCTION TARGETS--In his speech at the recent Third Session of the Fifth Jiangsu Provincial People's Congress, Governor Hui Yuyu set the following agricultural production targets for 1981: total grain output 46.6 to 48.5 billion jin; cotton 9.7 million dan; oilseeds 8 million dan, live pigs at year-end 20 million head. [Nanjing XINHUA RIBAO in Chinese 3 Apr 81 p 1]

JIANGSU'S EARLY RICE AREA--This year, various localities in Jiangsu plan to grow more than 6 million mu of early rice. Together with the spring rice area in localities north of Huai River, the total is close to 10 million mu, or one-fourth of the total multiple cropping area for rice. [Nanjing XINHUA RIBAO in Chinese 8 Apr 81 p 3]

JIANGSU'S 1979 LIVESTOCK PRODUCTION--In 1979 the output value of Jiangsu's livestock industry made up 12.9 percent of the gross output value of the province's agriculture, and the number of live pigs in inventory was 7.4 percent of the national total, or ranked second in the nation. The rate of pigs moving out of inventory was 70 percent, which is higher than the national rate of 53 percent. [Nanjing XINHUA RIBAO in Chinese 16 Mar 81 p 2]

CSO: 4007/442

NINGXIA

STATE GRAIN PROCUREMENT TASK COMPLETED

Yinchuan NINGXIA RIBAO in Chinese 5 Apr 81 p 1

[Article by Wen Yi [2429 5030] and Liang Jun [5328 6874]: "The Policy of 'One Quota for Five Years' Is Good; Communes and Brigades Enthusiastically Sell More Food Grains; Our Region Completed the Task of Producing Food Grains for State Procurement for the Year 1980 With a Surplus"]

[Text] Up to the end of March, our region has completed the 1980 task (the year for food grain production is from April 1 of last year to the end of March of this year) for state procurement of food grains with a surplus of over 2 percent. During the year, a total of 56.5 million jin of rice was harvested, an increase of 21 million jin over the previous year.

Last year, because the party's economic policy for farm villages was implemented, and many forms of production responsibility systems were implemented, the purchasing prices of agricultural sideline products were raised, the enthusiasm of the farmers was mobilized, and with the addition of good weather, our region obtained bumper harvests in agriculture, and created conditions for completing the task of state procurements with a surplus. At the same time, the people's government of the autonomous region evaluated the tasks of each county and city to produce food grains for state procurement and for procurement over plan, conscientiously implemented the policy of "one quota for 5 years without change," and basically achieved rational distribution of the burden, and the enthusiasm of each city and county to complete the task has been very high. Zhongwei County completed its task at the end of last November, and continued to grasp food grain procurement for storage. Now it has surpassed the quota by 12.7 percent, and it is the county with the largest surplus throughout the whole region. The procurement in Qingtongxia County constitutes over one-sixth of the entire region. Storage of autumn food grains for procurement took only one month to complete with surplus. Lingwu County's progress of storage of food grains for procurement was also completed one month earlier than the previous year.

To realize pricing based on quality, the food grain bureaus of many cities and counties trained thewarehouse keepers and they learned the knowledge of inspecting food grains and oil. At the same time, the method of inspection involving "evaluation by the team and examination by the warehouse" was popularized, basically realizing accuracy at each inspection level, assurance of quality of food grains and the state and the collective were both satisfied. According to inspection information, wheat of intermediate grade or above entered into storage for procurement throughout the region constituted over 87 percent of the total. Basically there were no food grains not passing the grades. The autumn food grains entered into storage were also good. Procurement of rice was also grasped more tightly by the food grains departments. Each city and county implemented the task of procurement of rice level by level down to each commune, brigade and production team. Yongning County rewarded communes and brigades that completed the tasks for procurement of rice with surplus. Measures were also taken to prevent rice from being shipped away. The amount of rice submitted for sale by Wuzhong and Yongning was over 7.6 million jin. Qingtongxia and Lingwu surpassed the quota by 12.3 million jin. Zhongwei County submitted for sale 390,000 jin more than the quota. After completing the tasks for procurement of food grains, many communes and brigades sold the surplus food grains and oil to the state at negotiated prices. According to statistics, the entire region negotiated procurement prices for over 78.8 million jin of food grains. Rewards of food grains in the form of added price and oil products procured amounted to 7.42 million jin.

In storing food grains for procurement, the food grain warehouses and station staff members at each basic level exerted efforts to improve the quality of service. They did not count the time of work, they worked hard, they made it easy for the communes and brigades and the masses of commune members and promoted the completion of the task of food grain procurement for the entire region.

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DROUGHT IN GUANZHONG, NORTH SHAANXI CONTINUES

Xian SHAANXI RIBAO in Chinese 10 Mar 81 p 1

[Article by the Information Department of the Provincial Meteorological Bureau: "Drought Continues in Guanzhong and Northern Shaanxi"]

[Text] Recently, drought has continued in Guanzhone and northern Shaanxi.

The total amount of rainfall during the 4 months since last November to February of this year at all localities throughout the province showed there were only 2 to 10 millimeters in the northern part of northern Shaanzi, 10 to 30 millimeters in the southern part of northern Shaanxi, the eastern part of Weinan region and the Baoji region, 30 to 50 millimeters in the Xianyang region and the Shanglu region, 50 to 70 millimeters in the Ankang region, and 70 to 98 millimeters in the Hanzhong region. Compared to the rainfall in winter, except the Hanzhong and Ankang regions where there was more rainfall, the majority of the regions throughout the province had less rainfall. Rainfall in the northern part of northern Shaanxi was less by 70 to 90 percent, rainfall in the eastern part of the Weinan region, the western part of the Baoji region and the Shangluo region was less by 40 to 80 percent, and rainfall in the southern part of northern Shaanxi and the remaining areas in Guanzhong was less by 10 to 30 percent. Throughout the entire winter, drought persisted in northern Shaanxi, the eastern part of the Weinan region and the western part of the Baoji region, and different degrees of drought occurred in the remaining regions of Guanzhong.

The amount of water from last September to November (before wintering of wheat) showed the amount of rainfall of each locality was less than that of the same period of past years by 30 to 80 millimeters. After winter arrived, the amount of rainfall continued to decrease, therefore moisture at the bottom soil layers was poor. Measurement of the moisture of the soil at a depth of 30 centimeters in wheat fields in Hancheng, Pucheng, Xian at the end of February showed only 13 to 14 percent.

After the rain during the middle 10 days of February and up to now, there had already been 20 days without rain. After spring arrived, temperatures rose rather quickly, there was a lot of wind at each locality north of the Wei River and in northern Shaanxi, the soil easily lost moisture, and drought has continued to develop.

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COTTON PRODUCTION TO BE INCREASED, FAVORABLE CONDITIONS EXIST

Xian SHAANXI RIBAO in Chinese 4 Mar 81 p 1

[Editorial: "Our Province's Cotton Production Must Be Increased"]

[Text] Cotton production must be increased to gain a big breakthrough this year. This was the hope expressed by the provincial committee and the provincial government to the broad masses of cadres and masses of the cotton regions at the provincial cotton production conference recently.

In 1981, the state ordered our province to plant 3.8 million mu of cotton fields and produce a total yield of 2.3 million dan, a vast planned increase. The task is difficult and the burden is heavy. The provincial committee and the provincial government have made a big decision to realize a breakthrough in this year's cotton production Less than one month after the spring holiday, a provincial cotton production responsibility system discussion meeting and a cotton production conference were held and the provincial agricultural committee's "report on learning the experience of bumper harvests of cotton in Shandong" was presented. While carrying out ideological mobilization, the provincial committee and the provincial government also made some major policy decisions regarding this year's cotton production. The people of the entire province, especially the broad masses and cadres in cotton regions, must become spirited and be determined to overcome the difficulties and use scientific methods to increase cotton production.

This year, our province's cotton production has started out from a relatively low foundation. Last year, our province's weather was a disastrous attack upon cotton production. Throughout the province, except for a few counties, most counties produced less. In some counties, the cotton yield even dropped to the lowest level since the founding of the nation. Why did the production of cotton decrease? A summary of some localities indicated that one reason was natural disasters and the second was human responsibility. This summary coincides with the actual situation. It is said that people have the responsibility. This means we must summarize the experience and lessons on the bases of subjective factors, i.e., on the bases of work. Last year's cotton production clearly showed that because the implementation of the production responsibility system was not the same, the yields were uneven; the level of scientific planting was not the same so the yields were uneven; management during the late period, especially the order of the times of picking and selling were not the same so the yields were uneven. A conclusion can be drawn from these "differences." Under the same natural conditions, man's enthusiasm and creativity have a decisive effect upon the yield of cotton. Although the natural conditions last year were unfavorable, there were still some counties in our province that produced increased yields, the yields of cotton of some communes and brigades even surpassed the highest level in the past. This is forceful proof. Therefore, mobilizing the masses to seek truth from facts and to summarize last year's experience and lessons of cotton production in work will greatly benefit seizing bumper harvests in cotton production this year.

Analyzing the situation of cotton production will make us see that this year's cotton production has very favorable conditions, and it will give us full confidence to seize bumper harvests. Last year, cotton production in Shandong Province made a breakthrough in the northern regions and the yield multiplied. Their experience has made us further liberate our thinking, widen our view, and encouraged us. We should also be able to achieve what Shandong, which has similar conditions as ours, has achieved. As regards our province, there are even more favorable conditions for cotton production this year. Since last year, further implementation of the party's food grains and cotton policy, especially the payments realized under the cotton pricing policy, and implementation of the responsibility system, have greatly elevated the enthusiasm of cotton planters. Readjustment of the distribution of cotton fields and expansion of cotton fields in watered land will fully develop the natural superiority of regions suitable for cotton production. The problem of rations of food grains for cotton planters debated for many years has basically been solved with the support of the Central Committee. The broad masses and cadres in the cotton regions have accumulated relatively rich experience in scientific planting of cotton and management. Each cotton planting county and commune and brigade is emphasizing leadership in cotton production more than at any other time, etc. All of these are favorable factors for us to increase cotton production this year. Fully utilizing and developing these favorable factors will enable us to continuously overcome unfavorable natural factors and temporary economic difficulties and realize breakthroughs in cotton production.

Strengthening and perfecting the cotton production responsibility system is the central link in seizing bumper harvests of cotton this year. Abundant facts prove implementing the production responsibility system, especially the joint production responsibility system, is a key measure to quickly increase cotton production. The masses and cadres of many localities said when they summarized their experience: implementing the responsibility system is better than not implementing the responsibility system. Implementing the joint production responsibility system is better than not implementing the joint production responsibility system. Implementing the joint production responsibility system for the laborer is better than implementing the joint production responsibility system for the unit. According to the actual situation of the communes and brigades of our province's cotton regions and summarizing the experience and lesson of the past 2 years, the relatively unanimous opinion of everyone is that in cotton production, the various forms of the joint production responsibility system must be implemented on a widespread scale, especially the implementation of the actual joint production responsibility system for the laborer. The responsibility system of "unified management and joint production down to the laborer" has been enthusiastically welcomed by the broad masses and cadres in practice. This type of production responsibility system and contracting production to the family which is "in form but not in actuality" are different in nature. It has combined closely the superiority of unified management of the collective economy and the labor enthusiasm of the individual commune member, stimulated the advantages of unified management and avoided the shortcomings of contracting production to the family. Therefore, it should be popularized. Of course, at different places, different communes and brigades, and even within the same production team, it should start from the actual need and the actual situation to allow many types of management, many types of labor organizations and many methods of paying wages to exist at the same time, one must not stick to one form and engage in doing everything in one single way. But we must not use this as an excuse not to actively advocate the most effective responsibility system that can most beneficially encourage the concern of the producer about collective production to the greatest limit, and the most beneficial system to increase production, income, and the commodity percentage. Even more so, we must not use this as an excuse not to establish the production responsibility system or to hide the state of "sleeping away the time" and "eating from the big pot." Now, the "rainy days" have passed, and "5 March" is about to arrive. Preparation for planting the cotton fields has already begun, and quickly establishing and making sound the cotton production responsibility system has become an urgent task. Each locality must quickly implement it according to the actual principles of implementing the production responsibility system stipulated by the Central Committee and the provincial committee and must not disregard it.

Cotton production at present is affected by weather conditions to a great degree. During the growth period of cotton in our province, frequently, low temperatures during the early period hinder the growth of seedlings, summer drought during the middle period hinders formation of cotton bolls, and dampness during the late growth period hinders opening of the bolls. Therefore, we must grasp the natural characteristics and patterns of Shaanxi to strive towards the advantages and avoid disadvantages in measures and techniques of planting and cultivating cotton, and create a way of producing high yields suitable to the situation in Shaanxi.

Since last year during the readjustment of the distribution of cotton fields, our privince's cotton planting counties were readjusted and condensed form 36 to 27. The area of cotton fields in watered land increased from 2.2 million mu to 2.6 million mu. To realize this year's task in cotton production, watered fields must be the key. If the unit yield of watered fields can be increased, the main burden of total yield in cotton throughout the province will be borne, and at the same time, by grasping well over 1.3 million mu of dryland cotton, we will, in this way, be in an active position to overcome the unfavorable factor of drought in cotton production. There are many key measures in carrying out major efforts to plant cotton in watered fields. One important measure is popularizing cultivation of seedlings and transplanting. Cultivating seedlings and transplanting can effectively extend the flowering and boll forming period of cotton, development is early, there are more bolls before summer, and the proportion of flowers before frost is large. Regarding our province's weather conditions, this is an effective measure to realize early maturation, high yields and superior quality of cotton. Since 1972, our province has popularized cultivation of seedlings and transplanting and this has definitely produced an effect upon increasing the yield. This is manifested more outstandingly especially in high yielding fields where water and fertilizer conditions are good. Production teams that already have a foundation, that possess water and fertilizer conditions, and that are skilled in techniques, can apply this measure over large areas. Efforts must be made to strive towards cultivating seedlings and transplanting one half of the cotton fields in watered land throughout the province. Concerned departments should have favorable supporting measures for communes and brigades that cultivate seedlings and transplant them.

Cotton is our province's bulk economic crop. In economic readjustment, agriculture must progress and light industry must also progress. At present, our province's cotton production is very far behind in supplying raw materials for the textile and light industries. Therefore, progress of the light and textile industries requires great progress in cotton production. Some key cotton planting counties and cities should grasp food grains, cotton and diversification together. During the spring sowing period, cotton is the main item to be grasped, cotton production should be taken as the breakthrough in rapid increases in yield of the entire agricultural sector and cotton should be used to stimulate food grain production and diversification. The key cotton producing localities, cities, counties should be led by major leading cadres to establish special work groups to strengthen actual guidance. Responsible cadres of the provincial, local and county agricultural and commercial departments must separately establish contract systems for counties and communes. Cadres involved in farm village work must implement the post responsibility system to go to the fields to take charge of fields and to take charge of the whole area. Comprehensive conditions for reward and punishment must be drawn up according to increases and ecreases in theproduction of cotton and other agricultural production of their communes and brigades.

Our province is one of the old cotton producing regions of the nation. Our cotton production has had a glorious history. At the beginning of the 1950s, our province's cotton production was among the highest of the nation. The several cotton planting experts of Shaanxi are also known throughout the nation. Now, the basic productive conditions of our cotton regions have undergone great changes since then, and the level of scientific planting of cotton has also improved greatly. As long as we are enthusiastic about cotton production, our province's cotton production will be able to realize a large breakthrough within a short period!

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STUDY ON DEVELOPING, USING DRY PLAIN UNDERGROUND WATER UNDERTAKEN

Xian SHAANXI RIBAO in Chinese 6 Mar 81 p 2

[Article by Cao Weizhong [2580 4850 1813] and Zhang Youzhong [1728 2589 1813]: "Results of the Comprehensive Study on Developing and Utilizing Underground Water of the Dry Plain North of the Wei River Have Been Obtained"]

[Text] Twenty-one scientific research results have been obtained in the comprehensive study on the rational development and utilization of underground water in the dry plain north of the Wei River, and other research topics are near completion. This work is being carried out by 40 units including five localities and cities, seven counties and scientific research, educational and business units organized by the provincial science committee, the geological bureau, the hydroelectric bureau, and the agricultural machinery bureau.

The comprehensive study on rational development and utilization of underground water of the dry plain north of the Wei River and the experimental engineering project of the underground reservoir of the region of Shichuan River in Fuping are both key national scientific research projects. Over the past 5 years, general hydrological and geological surveys covering 25,000 square kilometers and hydrological and geological surveys of the water supply to farmland in 22 counties of Fuping, Ganxian, Luochuan, etc. have preliminarily revealed that the natural resource of underground water in the dry plain north of the Wei River is over 360 million cubic meters. The exploitable resources of underground water as a source for water for farmland is 1,782,900,000 cubic meters, sufficient to irrigate about 8.55 million mu of farmland (year). Studies have proven the distribution of underground water resources in that area is very uneven, the buried conditions differ greatly, and to reach the figure for irrigation described above, further study of utilization measures are needed. At the same time, a definite understanding of such scientific data of the conditions of formation of underground water in this region, the distribution pattern, quality of water, quantity of water and hydrological and geological zoning has been gained. The old concept that there is no underground water in the "dry belt north of the Wei River" has been broken. Sections rich in water, such as the water in the cracks in bed rocks in the northern mountain regions in Ganxian and Liquan, hidden water in eroded shells and hidden water in parts of the loess layer distributed over more than 220 square kilometers provide underground water resources for urgently needed drinking water for people and animals and part of the water for agricultural use in that locality. A demonstration and model station has been established at the Guoyangpo production team in Ganxian. Welcomed results have been obtained at the three bases in Ganxian, Fuping and Luochuan in the experiments in comprehensive management and planning for garden style farming of well irrigated regions and in the experiment in the low quota irrigation system to conserve water and increase yield. The underground water reservoir of the Shichuan River in Fuping is an experimental project to regulate and store water of the "three rivers." Hydrological and geological surveys of the conditions for building a reservoir for underground storage of water have basically shown the Shichuan River section in Fuping is a natural and ideal location for an underground water reservoir. The dried reservoir has a capacity reaching 400 million cubic meters. In addition, definite scientific data have been obtained in the planning and implementation, in proving the water resource and introduction of "outside water." A relatively complete set of scientific data has been provided for the building of an underground regulatory and storage reservoir.

The cultivated land in the loess dry plain north of the Wei River constitutes over one-third of the cultivated land throughout the province. Agricultural production has been threatened by drought for a long time. Since Liberation, each level of the party and government leadership and the broad masses have thought of comprehensive regulation, storage and utilization of water resources to solve the problem of drought. After these two comprehensive scientific research efforts, the development of science and technology and water conservancy of this region have been activated, large numbers of scientific and technical personnel in hydrological geology, water conservancy, agriculture and agricultural machinery have been trained and improved, and some economical and scientific ways have been found for overcoming the devil of summer drought and in developing agricultural production.

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BAOJI SPRING CORN PRODUCTION INCREASING

Xian SHAANXI RIBAO in Chinese 10 Apr 81 p 2

[Article by Zhao Zhenyu [6392 2182 1342] and Xing Wenjie]6717 2429 2638]: "Develop Superiority of the Mountain Region; The Joint Production Responsibility System Is an Important Measure To Increase Yield of Spring Corn"]

[Text] The people's government of Baoji City started out by further strengthening and perfecting the production responsibility system and planned and guided the preparation for planting and sowing of spring corn early.

The Baoji area has rivers, mountains and plains. The natural conditions are suited to growing corn. The planting area of corn increased from less than 1 million mu in 1949 to 2.28 million mu in 1980, constituting one-third of the sowing area of food grains. The yield constitutes 43 percent of the yield of food grains. The proportion of spring corn produced by the counties and communes in the mountain region is even greater. The practices of the masses prove that high yields of spring corn are indeed the superiority of food grain production in the mountain area. Baoji City plans to plant 1.1 million mu of spring corn this year.

The city's people's government not long ago held a spring corn production conference. Afterwards, the deputy secretary of the city committee and deputy mayor Zhao Wenju [6392 2429 5282] et al also conducted small scale discussion meetings to seek a good way to increase the yield of spring corn. Comrades participating in the meeting considered: corn is a large plant crop, it does not occupy a large area, counting the yield is easy, distribution is convenient, and because the living quarters and the cultivated fields of the masses in the mountain region are scattered, implementing the joint production responsibility system is an important measure to seize bumper harvests of spring corn. Of the 49 production teams of the Shiguo Commune in Qianyang County, 39 implemented the production responsibility system of joint production to the group or to the laborer last year. The total yield of autumn food grain crops of the entire commune increased nearly 2 percent over the previous year. Last spring, the Dengjiashan production team of the Hekou Brigade of the Hekou Commune in Feng Xian implemented the production responsibility systems of joint production for the laborer and separate family management of spring corn planted in 65 mu. The per mu yield reached 428 jin, total yield increased 3.5 percent over that of the previous year. Comrades participating in the discussion meetings all decided to establish a production responsibility system suitable to the local circumstances before sowing of spring corn and to carry out their responsibilities from the time the seeds enter the soil to the end. At present, many communes and brigades in the mountain area have already thoroughly established the area for planting in their work of preparing for planting of spring corn and after the spring rain they can begin to sow on a widespread scale.

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SHANDONG

BRIEFS

LARGER AQUATIC OUTPUT REPORTED--During the first 3 months of this year, fishing communes along the coast of Shandong produced 39,200 tons of aquatic products, an increase of 1,900 tons over the comparable period of 1980. [Jinan DAZHONG RIBAO in Chinese 26 Apr 81 p 1]

COTTON SOWING COMPLETED IN SHANDONG--Despite drought, cotton sowing was completed on more than 10 million mu of cotton fields in Shandong by the end of April, thus completing the province's cotton sowing plan. [Jinan DAZHONG RIBAO in Chinese 5 May 81 p 1]

CSO: 4007/442

EFFECTS OF DRY HOT WINDS, DROUGHT REPORTED

Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 2, 5 Apr 81 pp 10, 27

[Article by Liu Jiasen [0491 1367 2772] of the Agrometeorology Laboratory of the Crop Institute of the Shanghai City Academy of Agricultural Sciences: "Dry Hot Winds and Drought in the Shanghai Area and Preliminary Discussion of Protection"]

[Text] In the Shanghai area, besides low temperatures, torrential rain, hail and strong winds, dry hot winds and drought are also major agrometeorological disasters. Analysis of the meteorological data of the recent 100 years shows the occurrence of dry hot winds is about 25 percent during the three wheats season or the filling period of early rice, i.e., once every 4 years. Since Liberation, crops have been affected to different degrees in 7 to 8 years. In serious years, the yields have decreased by over one half. Once every 3 years, aridity of the air and the soil caused by a continuous period without rain or little rain has affected cotton production. Since Liberation, this has occurred nine times. Viewing the water conservancy conditions of suburban Shanghai, such drought can be alleviated by irrigation, but the problem is that if more rainfall occurs after irrigation, there will be too much moisture and cotton will grow wildly. Therefore, in directing drought resistance, grasping the duration of persisting drought is also a problem in cotton production that needs to be solved urgently. The farmers in the suburban areas have a lot of experience in recognizing and protecting against the problems of dry hot winds and drought. Here, we will give a preliminary discussion based on related information and information obtained in our surveys and observations.

(I) The Main Period of the Effects of Dry Hot Winds and Drought

There are two periods in which the Shanghai suburban region is affected by dry hot winds: The first period is from the last 10 days of April to the first 10 days of May. During this period, the three wheats are in their filling period. If a highest temperature of 27°C is encountered, and there are southerly or southwesterly winds stronger than 3 to 4 in scale, the relative humidity at 1400 hours is below 40 percent, and the situation continues for 2 days or more, full filling of the three wheats will be hindered, the spikes of wheat will loose water and change color, semi-filled grains will increase, the thousand grain weight will drop, and the higher the temperature, the greater the effect. For example, during the latter part of the last 10 days of May 1966, temperatures of 28.8 °C to 29.5°C occurred continuously for more than 2 days, the realtive humidity at 1400 hours was 35 to 40 percent, southerly winds were stronger than 4 in scale, and these caused the glume of the wheat spikes during the peak period of filling to change color. And with more rain water during the early period of growth, the root system aged, transport of nutrients is weak, causing early withering and forced heat. The percentage of semi-filled grains increased about 10 percent, the thousand grain weight dropped by more than 0.5 gram, affecting yield. Similar situations occurred in 1961 but to a lesser degree.

The second period is during the first and middle 10 days of July. At this time, early rice is in the peak milky ripe period after flowering and is easily affected by dry hot winds. According to observations, at this time, the main effect is caused by high temperatures. With the addition of dry winds of $<$ 40 percent in relative humidity, the effect will be even greater. Experiments conducted in recent years have shown that the filling speed, fruiting percentage and thousand grin weight will all be affected when the highest temperature is $>$ 32°C persisting for 5 days or more. If the highest temperature is $>$ 35°C and persists for 5 days or more, the effect will be even greater. The fruiting percentage under a temperature of 32°C persisting for 5 days is similar to the fruiting percentage under a temperature of 28°C lasts for 15 days, the fruiting percentage will drop by about 3 percent and the thousand grain weight will drop nearly 1 gram. Under a temperature of 35°C for 5 days, the fruiting percentage will drop 10 to 15 percent, semi-filled grains and empty grains will increase, the thousand grain weight will drop 0.42 to 1.85 grams, and the longer the duration the greater the effect. Also, high temperatures will slow the speed of filling, causing nutrients to accumulate in the stem and the sheath, and after yellow ripening, the weight of grains drops, forming early withering. These experimental results coincide with the actual situation relatively well. For example, in 1971 in the Shanghai area from 26 June to 22 July, the highest daily temperature each day was above 32°C, and from 28 June to 7 July, the highest temperature each day remained over 35°C continuously. The relative humdity at 1400 hours was $<$ 40 percent for many consecutive days. The southerly dry winds were also of 4 in scale, seriously affecting early rice in the filling period at the time. According to surveys of experimental fields, because high temperatures force heat and cause early withering, the percentage of empty grains increases 10 to 12 percent, the thousand grain weight about 1 gram, and per mu yield of early decreases by 100 to 150 jin.

The period affected by drought is mostly after the early summer rains, i.e., summer drought that occurrs from the middle 10 days of July to the last 10 days of August. Preliminary survey and analysis shows if during this period there is no rain or little rain for 30 days or more continuously, the total amount of rainfall does not surpass 30 millimeters, the daily amount of rainfall is less than 15 millimeters, there are no rainy days with a rainfall of over 10 millimeters in 2 days, and the critical value of water content in the soil is 13 to 14 percent at a depth of 30 centimeters from the surface of the cotton field, growth of cotton will be hindered by drought, massive shedding of cotton buds and bolls occurs, affecting yield. For example, during the continuous drought from 13 July to 17 August in 1966, total rainfall was only 0.4 millimeters. At the beginning of August, the water content of the cotton fields was determined to be 13.7 to 14.6 percent, and the growth of cotton was visibly affected. Starting from 18 August, continuous rain for 6 days amounted to 50.9 millimeters, alleviating the drought. Therefore, the cotton fields treated for drought resistance during the first 10 days of August grew better than cotton fields treated for drought resistance during the middle 10 days of August. In the first fields, growth was stable, the plants were healthy and there were more bolls while in the latter fields, the cotton plants grew profusely with less bolls.

(II) Measures to Protect Plants from Dry Hot Winds and Drought

According to the weather characteristics of the Shanghai suburb, we believe the major conflict of "water" must be grasped from the beginning to the end and corresponding protective measures should be taken during different periods of damage:

1. The dry hot winds during the filling period of the three wheats are mainly due to dryness of the air and sudden transpiration and secondarily to high temperatures. At the time, moisture in the soil is not always lacking. Facing this situation, the water flow in the irrigation and drainage ditches in wheat fields must be smooth, and at about noon when the relative humidity is the lowest, water should be sprayed around the spikes to increase wetness. This will increase moisture in the air and realize increasing dampness and correspondingly reduce the temperature in the spikes.

2. The dry hot winds during the filling period of early rice are mainly due to the effects of high temperatures and secondarily to low humidity.

Therefore, the rice fields should be irrigated to reduce temperature so that the ground temperature and the atmospheric temperature around the spikes are all lowered, correspondinly increasing humidity in the fields. According to experiments, from noon to 1400 hours, when the temperatures are high, irrigating the fields with 7 centimeters of water will lower the ground temperature by 4.0°C compared to fields not irrigated, the atmospheric temperature at the spikes can be lowered by 3.5°C, the relative humidity among plants and at the spikes can be increased by 9 percent. If the dry hot winds are severe, spraying water will produce visible effects.

3. Hormones and nutritive chemicals can be sprayed to strengthen the resistance of the plants to high temperatures. Experiments have preliminarily shown that spraying 50 ppm of vitamin C or 20 ppm of "920" solution twice consecutively every other day 6 to 10 days after heading of early rice can protect the effects of a high temperature of 35°C. The thousand grain weight is increased by 0.52 to 1 gram over the control. The percentage of full grains is increased by 5.5 to 10.9 percent over the control. Definite results can also be obtained using stimulants, growth hormones and black phosphorus but further proof is needed.

4. Summer drought in the cotton fields can be overcome by irrigation and spraying water but these should be done according to long-range weather forecasts in case there is rainfall after irrigation.

The above is only some shallow opinions concerning the effects of dry hot winds and drought and protection against them. Because the geographical conditions of the Shanghai suburbs along the river and the sea coast are different from regions far away from the river and the sea coast, the weather is also different and the drought that occurs also differs. The indicator of the effect of dry hot winds is also different for different crops, different varieties, different sowing times and it should be continuously and more profoundly studied. the mechanism of the effect of low humidity due to dry hot winds upon wheat crops and scientific use of water and the use of water to regulate temperatures all have to be explored further so that these measures will coincide more with the actual situation and better results can be realized.

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MEETING ON RURAL FINANCE HELD IN KUNMING

Yunnan YUNNAN RIBAO in Chinese 17 Mar 81 p 2

[Article by staff writer: "Strive for Agricultural Bumper Harvest to Make Greater Contributions to Economic Readjustment"]

[Text] A meeting of agricultural bank branch managers from all over the province was recently convened in Kunming. The group felt that to implement the Central Committee's adjustment guidelines, agricultural production should be greatly supported and the unreasonable circulation of rural credit should be controlled. It was felt that proceeding from actual conditions, the following should be accomplished: resolutely support that which should be supported, strictly control that which should be controlled, vigorously enliven that which should be enlivened, and conscientiously control that which should be tightly controlled. We should enthusiastically accomplish the rural financial responsibilities of "implementing adjustment guidelines; tightening credit control; actively organizing funds; effectively managing working capital; supporting agriculture, forestry, animal husbandry, sideline production, and fisheries; support agriculture, industry, and trade; developing commercial production; improving economic efficiency; and striving for all-round bumper harvests in agriculture."

In order to fulfill the aforementioned responsibilities, the group requested that implementation of the following primary tasks be required of all levels of agricultural banks and credit cooperatives:

1. Implement a rural itemized credit plan and practically guarantee fulfillment of the plan. The rural itemized credit plan in our province is already being gradually implemented in accordance with the plan which was requested by the bank head office to be passed down to all local, prefectural, and municipal central branches and municipal branches. Furthermore, the execution of the plan, the cash in circulation, the withdrawal of cash from circulation, and reports to upper levels of the agricultural banks are examined monthly. At the same time, reports to local Party and government departments are made and sent to the local People's Bank.

2. Make efforts to raise funds and pay close attention to the withdrawal of rural credit from circulation. Last year, our rural bank savings and commune members' savings in Yunnan increased greatly, maturities and overdue loans were also numerous, the greatest in 30 years. Policies must be implemented to induce savings by

commune members, state farms, and rural market towns by increasing service and publicity. At the same time, there should be plans and steps taken to increase types of savings deposits in line with local conditions. The deposits of rural organizations, groups and business units should be increased. Rural cash control and control of bonus and wage funds should be tightened. Following the development of various rural management controls, and in accord with income circumstances, loans should be recalled.

3. Working capital should be well managed. Efforts should be made to support expanded grain production by communes, production brigades and commune members and to promote comprehensive developments in farming, forestry, animal husbandry, sideline production, and fisheries. Support should be given to rural commerce and commodity circulation should be broadened. The granting of all loans should benefit the readjustment, efforts for a bumper harvest, and comprehensive development of farming, forestry, animal husbandry, sideline production and fisheries. All levels of agricultural banks and credit cooperatives should take as their primary tasks: the support of increased grain production; assistance to provincially established commercial grain bases; the development of cash crops and commercial forests; the development of a livestock industry; the development of various controls; and the improvement of commercial products. Agricultural loans should benefit and promote consolidation of an integrated economy and the consummation of a system of production responsibility. At the same time, they should implement a system of responsibility by contracting production to households and contracting procurement and trade reserves [jiao ti liu 4945 2251 3966] to households. They should also vigorously support required production funds. Business loans to communes and brigades should assist the consolidated improvement of said businesses and continue to support healthy development as is in line with readjustment guidelines and the national plan. At present, they should assist relevant sectors in accordance with the principles of a source of raw materials, a requirement for construction, a market for the product, and a profit for management as has been requested by the provincial government in order to further adjust and improve the commune and brigade enterprises. Such loans should continue to support the expansion of commune and brigade enterprises based in the growing and breeding industries, and they should give support, in line with local conditions, to rural sideline product processing industries not competing with state enterprises for raw materials. They should give vigorous support for supply and marketing cooperatives purchase of rural sideline products. Funds should be immediately provided, within the scope of the national plan in order to support the fulfillment and overfulfillment of the national plan. At the same time, such loans should support the organization of the means of production by supply and marketing cooperatives and the supply of daily necessities in order to serve the expansion of agricultural production and to serve rural commune members.

4. Give full play to the role of credit cooperatives in supporting production and invigorating the rural economy. During the present economic readjustment, the deposit and loan plan of credit cooperatives should be examined and approved by county branch banks in order to benefit an integrated balance in the rural credit plans of county banks and communes. The division of labor between bank and cooperative should still be according to their strength and planning shall give due consideration to the funds circumstances of the credit cooperatives. Overall

arrangements cannot be made giving favor to one side nor can they be done "in one big slice."

The meeting concluded that if this year's rural financial work is to be completed the tasks will be formidable. All levels of agricultural banks should normally take the initiative to give an accounting to local Party and government leadership, to give full play to the "thermometer" in order to implement adjustment guidelines and make contributions to the expansion of our agricultural industry.

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BROAD RANGE OF USES OF NATURAL SPICES REPORTED

Yunnan YUNNAN RIBAO in Chinese 18 Mar 81 p 3

[Article by Kun Xin [0981 7451]]

[Text] There are many types of spices with a broad range of uses. For example, in the everyday lives of people, there is soap for washing faces, cosmetic moisturizing creams, talcum powder for babies, hygienic fragrances used in clinics, toilet water used as a mosquito repellant; and there are also fruit candies, incense, liqueurs, pastries, cold drinks and other fine products which could not be manufactured without spices. In medicine, spices are effective as disinfectants, germicides, analgesics, for clearing out passages [tong qiao 6639 4534] and antipyretics. The new, highly effective pesticide in broad use in rural areas at present, dike song [2420 0344 2646], also uses spices as an ingredient in its composition.

There are many different varieties of natural spices in Yunnan. There are 340 varieties of spice plants throughout our nation and our province of Yunnan as 240 of those varieties. Amongst those varieties are the following special spice varieties:

Ylang-ylang, which belongs to Cananga odorata, grows in western Shuangbannazhou and is a rare tropical spice tree. Ylang oil, extracted from its flowers, is an important fragrant natural spice. Essence of ylang oil is called "flower of flowers" or "king of flowers" abroad.

Jasmine, which belongs to osmanthus liana, grows in the tropical and temperate areas of our province. The extracts and pure oils drawn from its flower can compete favorably in the spice industry with rose oil. It is an important product in the manufacture of high quality cosmetics and essences.

Vanilla, which belongs to orchidaccese liana, is a typical tropical plant. Originally produces in ground under tropical rain forests, it demands fairly good soil, temperature, humidity, and light conditions. It has been successfully cultivated in the Jinghong area of our province. The spice product from processing vanilla pods contains great amounts of vanillin. Vanilla enjoys the title of "king of edible spices" in the world.

Champa, commonly called champaca, which belongs to magnoliaceae, was originally produced in the southern foothills of the Himalayas. The champaca extract produced from its flowers contains isoeugenol, phenol, phenyl alcohol, and other ingredients. The total world production of champaca extract is a mere 10 to 12 kilogram. Our province has already fixed 300 trees of Yiliang and are growing seedlings at western Shuangbanna and other places in preparation for increased expansion.

Lingxiangcao [7227 7449 5430], which belongs to Baochunhua [1032 2504 5363] family, is partial to warm humidity and grows in large forests in the vicinity of Yuanchun, Jinping, and Yuanyang Xian in our province. Tincture of Lingxiangcao is an extremely strong fixative and has the peculiar fragrance of tobacco. It plays a decisive role in improving the flavor of tobacco.

In the past, our nation has relied solely on imports to fill gaps in geranium oil, moss oil and other products. After the development of the spice industry in Yunnan, not only will our domestic needs be satisfied but there will also be exports. Last year, eucalyptus oil alone earned $1 million in foreign exchange for our nation.

Why are the spice resources of Yunnan so abundant? Yunnan's vegetables have the name of "plant kingdom" [as published]. This is closely related to the province's geographic location, topographical characteristics, and multiple climates. For instance, the distance from north to south is 910 kilometers, however, Meilixueshan mountain in northwest Yunnan rises to an elevation of 6,740 meters and the mouth of a river in southern Yunnan has an elevation of a mere 76.4 meters. The total topography gradually slopes from northwest to southeast with high mountains and deep valleys ranging in between. The average elevation difference is over 3,000 meters. The scene in the river valleys is tropical or sub-tropical while on the mountain tops all is a winter snow scene, this is what is known as "a three-dimensional climate."

The average yearly temperature gradually drops from south to north. The average annual temperature in the southeast region of rivers is 22.6° centigrade while the average for Deqin in the northwest is a mere 4.7° centigrade, a difference of about 18 degrees. This is equal to the average annual difference between Guangzhou and Changchun. Spice plants of all shapes and forms grow in this environment which seemingly synopsizes all of the various climates of the entire nation. If we are to hasten the basic construction of our natural spices then we must fully utilize the natural conditions bestowed upon the province in order to make a contribution to the four modernizations and to bring benefit to the people.

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SYSTEM OF NEGOTIATED PURCHASE, MARKETING IN DALIBAI AUTONOMOUS REGION

Yunnan YUNNAN RIBAO in Chinese 24 Mar 81 p 1

[Article by Li Zhenglie [2621 2973 3525]: "Dalibai Autonomous Prefecture Negotiated Grain Purchase of Over 30 Million Jin"]

[Text] All levels in the grain sector in Dalibai Autonomous Prefecture adhere to the principle of a combination of planned adjustment and market regulation, while at the same time guaranteeing fulfillment of state purchase quotas and actively developing negotiated purchases and marketing. From April of last year to January of this year, the entire prefecture's negotiated grain purchases in the market and from production brigades totaled 30,970,000 jin. Of this amount, 14.14 million jin was rice, 11.57 million jin was turned over to supplement the state grain reserve, and 12.7 million jin was negotiated sales.

Beginning from April, 1979, this prefecture's grain sectors, following the lifting of restrictions on the grain and edible oils market and in the spirit of the Third Plenary Session of the Eleventh Central Committee, developed negotiated purchases and marketing for grain. More than a year's experience verifies that with the guidance of national planning and policies the advantages to developing negotiated purchases and marketing for grain are numerous: 1. It stabilizes grain prices, stimulates the market, and reassures the public. The grain production in this prefecture increased for three successive years. Last year's total grain output exceeded the highest level in history. It showed a 5.8 percent increase over 1979. However, there was an imbalance in product varieties and area. There was a great disparity in market grain prices and little rice available. For example, last year, Binchuan County showed a decrease in production due to a drought. People were all tense. The county grain bureau negotiated the marketing of corn at a price of 18 yuan per 100 jin, maintaining the price within the county at the level of neighboring county, leaving those elements engaged in speculation and profiteering with no opportunity to take advantage. The cadre and masses were extremely happy. Since last year, grain prices for the entire prefecture have continually stabilized or dropped. For example, the average price of husked rice in January of last year was .42 yuan per jin while the average price for this January dropped to .36 yuan per jin. 2. It regulates shortages and surpluses, satisfying the needs of the people and national construction. In 1979, some communes in mountainous areas of this prefecture suffered a drought in late autumn and a decrease in production. The grain departments sent negotiated market grain to the mountainous areas avoiding a long and difficult journey for the people of the mountain area to buy grain at high prices. The people in the mountain areas happily praised the assistance sent them. The negotiated purchase and marketing of rice alleviates the contradiction between the primary food grains other than wheat and rice existing in the grain supplies of cities and villages, strengthening the alliance between laborer and farmer. In addition, Lijiang, Nujiang, Zhongdian, Chuxiong, and other special prefectures and areas outside the province were also supported, strengthening national solidarity. 3. Supporting production did not create a condition of "cheap grain harming the farmer." Last year, the fall grain harvest of this prefecture was large and the grain prices in some markets tumbled too far below the purchase price. The market prices for the new spring crop also fell repeatedly. In a few markets, the price of husked rice fell in one drop to .28 yuan per jin. The grain departments made negotiated purchases insuring that the price of husked rice would stabilize at a specific level, safeguarding the farmer's enthusiasm for expanding grain production. Last year's total grain production for Eryuan County increased 7.14 percent over that of 1979. Surplus grain was in the hands of many communes, brigades, and commune members. After the expansion of negotiated purchase and marketing, cadre and the masses eagerly sold surplus grain to the state. From April of last year to January of this year the negotiated purchases of this County totaled 5.37 million jin, of which 3.02 million were rice. 4. The expansion of negotiated purchase and marketing supplements the state reserves and is also beneficial to improving management control of enterprise, to turning deficits into profits, and to accumulating capital for national construction.

9795
CSO: 4007/340

WORK ON SOIL SURVEY DISCUSSED

Kunming YUNNAN NONGYE KEJI [YUNNAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 2 25 Mar 81 pp 18-20, 33

[Article by Wang Wanfu [3769 2429 1381]: "Keep On Doing a Good Job of Soil Survey"]

[Excerpts] Yunnan Province has a land area totaling 591 million mu, 4.1 percent of the national total. Its 49.6 million mu of cultivated land accounts for 6.93 percent of its land. Forestlands totaling 143 mu amount to 24.2 percent. Bush forests, sparse forests, and young forestlands total about 100 million mu or 16.58 percent. Barren mountains and wastelands amount to 170 million mu or 28.79 percent. Water surfaces of 4 million mu amount to 0.7 percent, and cities and towns, villages, plants and mines, and quarry mountains occupy 130 million mu or 22.8 percent. Analysis of the foregoing general situation shows overall characteristics as follows: Land and soil types are complex; mountain areas and large, and cultivated land scant. Distribution of various kinds of land resources is uneven; the land utilization rate is not high, with great disparity in levels of utilization; production potential is great, but land resources are by no means abundant. Cultivated land in the province amounts to only slightly more than 1.4 mu per capita. In Zhaotong county, where surveys have been completed recently, cultivated land is 75 percent greater than the annual report acreage (including 38.9 percent more wetlands and 82.6 percent more drylands). Survey of cultivated land in Xiaguan City shows 91 percent more than was in the annual report, principally rotationally fallow acreage being much more. Statistics for 5.5 million mu of cultivated land in some counties where soil surveys have begun in the province show an investigated area that is 43.4 percent larger than in the annual report. Calculations made on the basis of pertinent satellite telemetry materials show cultivated land in China to be 2.26 billion mu, 51.6 percent more than statistics show. On the basis of these calculations, the amount of land in Yunnan Province is still only slightly more than 2 mu per capita, vastly lower than the 26.8 mu per capita of Canada, the 14.6 mu per capita of the United States, the 13.6 mu of the USSR, the 7.4 mu of Rumania, the 5.6 mu of Yugoslavia, or the 5.3 mu of France. In terms of land area per capita, the national average is 14.4 mu with Yunan Province having a little more than 19 mu; however, the mountain areas are large; distribution is very unbalanced. Plains of more than 1 square kilometer in size in Yunnan Province number 1442, amounting to 6 percent of the total area; treeless uplands amount to 10.7 percent, and mountainlands amount to 83.3 percent. As for forestlands, the forested area of 60 counties is less than 20 percent, and in 19 of these counties, the forested area is less than 10 percent.

Noteworthy is that of the available cultivated land, except for the plains area, most is fairly scattered. The farmland construction base is weak with two-thirds of all farmland lacking irrigation, and more than one-third being fields of low productivity. On an additional several million mu of rotationally fallow lands, erosion is rather serious. Barren mountains and wastelands (overgrown land) awaiting development, bushlands and sparse forestlands, amount to no more than 9 mu per capita, most of which are in mountain regions or on slopes with little soil and can be used only for afforestation or as pasturelands. The area suitable for agricultural reclamation is no greater than about 12 million mu, but it is widely scattered. Consequently, any thought of expanding the cultivated area of Yunnan Province to develop production shows no great potential; rather reliance should be placed on improvement in farming techniques and improvement in the level of scientific farming, with efforts going to increasing per unit yields from existing cultivated land, while at the same time using barren mountains and wastelands for vigorous development of forests, the livestock industry and mountain forest specialties.

Full understanding of land resources requires investigation, and classification of soils is the foundation for investigation. During the first half of 1980, the National Agricultural Zoning Commission established a land resources unit, which put forward a preliminary draft for study and discussion titled, "Classification of Land Use and Its Implications," which classified land into 11 major categories and 59 sub-categories. For example, cultivated land was amajor category including wetlands, irrigated lands, drylands, and vegetable lands as four sub-categories. Another was groves including orchards, mulberry groves, tea plantations, rubber plantations, tropical crop gardens, and other (meaning a degree of ground cover above 0.50). Forestlands (with a cover rate above 0.3) included timber forests, economic forests, firewood forests, shelter forests, bamboo forests, special use forests, bush forests (with a cover of more than 0.4), immature forests and afforested lands, cut over forests, and sapling nurseries. Forest areas used for the pasturing of cattle were included in the forestland statistics. Grasslands meant areas other than forestlands where grass grew for a cover rate of more than 0.15, including natural pasturelands, natural haying areas, improved grasslands, man-made grasslands, and grasslands not being used. In addition was sparse forest grasslands, meaning grasslands in which sparse forest cover did not amount to more than 0.3 (for which statistics were included under grasslands). This system did not distinguish barren mountains from wastelands, considering the concept too murky, but rather listed them separately under grasslands, rocky mountain barren lands or other categories. Currently there is a fair amount of discussion about forestlands and grasslands criteria. The Ministry of Forestry holds that sparse forests should be zoned as forestlands, and disagrees with their zoning as grasslands. Farms and land reclamation departments also have some views on the lack of zoning for wastelands. We feel it would not hurt to zone barren mountains and wastelands, while at the same time denoting them as being suitable for agriculture, suitable for forests, or suitable for livestock in three sub-categories.

In order to meet the zoning requirements of some counties in the province, in the 35 counties in Yunnan Province where soil surveys have been launched emphasis has been largely on the soil in cultivated land in response to demand, while at the same time commune by commune investigation has been done on the nature, distribution and soil utilization of other natural soils to produce maps that contain no "holes." In addition to the maps being prepared by counties, communes, and locales showing soil distribution, the zonal maps showing improved soil utilization, and maps showing soil nutrients (which communes are not doint) it is intended to prepare maps showing land use and land evaluation maps at a scale of 1/250,000, 1/50,000, and 1/200,000 respectively. Preliminary statistics show that 288 communes have virtually completed their soil survey tasks with the area surveyed amounting to 67.85 million mu or 45 percent of the area of 35 counties, of which 8.67 million mu amounts to 79 percent of the cultivated land in the 35 counties. Of these 35 counties, Xiaguan City has finished entirely, and Zhaotong, Gejiu, Zhaoan, Mile, Mengzi, Guandu, and Baoshan counties (or regions) and cities have virtually completed their field work, and most of the remaining counties will have substantially completed theirs by the end of the year.

Through this soil survey, preliminary clarification has been made of the utilization of each type of soil, and an inventory has been made of cultivated land, forestland, fruit orchards, barren mountains and wastelands suitable for agriculture, forestry, or livestock raising, water surfaces, some quarries, and land use in cities, towns, villages, and stockaged villages. Though a little cruder that the aforementioned soil categories and acreage calculations,sstill, considering available technical equipment, it provides basic data for patterning agricultural, forestry, livestock raising, sideline occupation, and fishery production and for beginning rational use of land resources. The survey also clarified the quantity and quality of cultivated land (including the types and area of soils and physio-chemical properties), summarized the experiences of the masses in distinguishing soils, improving soils, using soils, and increasing the fertility of soils to obtain consistently high yields, and it discovered obstructive factors in low yield fields. In short, initial results of the Yunnan Province soil survey have clarified land use in some areas, and have provided fairly reliable basic data for the conduct of comprehensive rating of productivity of all types of soils, and for agricultural zoning and agricultural production. All of the aforementioned counties show considerable regard for these results. For example, the five counties of Yuqi, Yiliang, Qujing, Dali, and Baoshan, which launched soil surveys, set up a 100,000 mu demonstration plot for rational use of fertilizer, and on the bases of soil nutrients, previous crop, and variety to be planted, they worked out a fertilization plan, which emphasized coordination of organic and chemical fertilizer, coordinated use of nitrogenous, phosphate and potash fertilizers, the promotion of deep fertilization, and strengthening of water management. As a result, a general decrease took place in quantity of nitrogenous fertilizer used; fertilizer cost dropped by 10 percent, and yields increased by from 6 to 15 percent as compared with a control for a total increase in output of 8.5 million jin.

9432
CSO: 4007/404

DEVELOPMENT OF SOYBEAN PRODUCTION IN YUNNAN URGED

Kunming YUNNAN NONGYE KEJI [YUNNAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 2 25 Mar 81 pp 37-39

[Article by Dai Wenhan [2071 2429 5060]: "Make the Most of Yunnan Province's Advantages for the Development of Soybean Production"]

[Excerpts] In 1978, Yunnan Province's output of soybeans was 190 million jin, of which 47 million jin were purchased by the state. In 1979 as a result of drought disaster, output declined to only 120 million jin, of which the state purchased 14 million jin, or only one-third the usual annual amount purchased. The low level of beancurd, and soy sauce supply throughout the province were greatly affected. Last year more than 10 million jin of soybeans were brought into the province from elsewhere.

Soybeans are a dryland crop. Yunnan Province has a cultivated area of more than 42 million mu of which about three-fourths is dryland. Great potential exists for the development of soybeans, so why has a shortage of supply occurred during the past several years. The main reasons are as follows:

1. One sided emphasis on "taking grain as the key link,", particularly the emphasis on production of the grain crops, rice, corn, and wheat whth some other grain crops virtually being squeezed out. Under the guidance of such mistaken policies, Yunnan Province's famous zimi [4793 1717] has disappeared in recent years; buckwheat, mung beans, and bingdou [0393 6258] are no longer seen; glutinous rice and broad beans are both in danger, and production of soybeans has also been greatly impaired.

The fine tradition and fine experiences in the growing of soybeans has been virtually blotted out.

2. Production criteria and production quotas have been handed down directly from above with production teams having no authority to guide, or no self-determination about agricultural production. Because of the need to fulfill production quotas layed out by superior authority, the hands and feet of the masses of commune members were tied. They could not adapt general methods to local situations to make the most of advantages in active development of soybean production.

Conflict between price and value of soybeans. For a long time, the price paid for soybeans has been rather low. Procurement price has been only 0.21 yuan per shijin.

In 1979 when prices of agricultural by-products were raised by 14 percent, each jin was 0.24 yuan, and at a 50 percent increase in the price of portions sold outside of plan, the price was 0.36 yuan per jin. Balanced against 1 jin of unprocessed grain, 1 jin of the portion in excess of procurement balances out at 1.5 jin of unprocessed grain. But when this price is compared with that of rice, it is also very unreasonable. Cost of rice is 0.134 per shijin (medium rice), and during last year's increase in prices for rural products, this was increased by 21.6 percent.

Why is the price for soybeans so unreasonably low? One reason is that in terms of production, output is fairly low, only 100 to 200 jin per mu being produced. Though 1 jin of soybeans is now balanced against 1.5 jin of unprocessed grain; nevertheless, it still is not as worthwhile as growing corn (which is also a dryland crop). Corn produces yields of 400 to 600 jin per mu, and looked at in terms of the laws of value, inasmuch as output of soybeans is low, price is also low; consequently, the masses would rather grow corn than soybeans. 2. In terms of nutritional value and commercialness, soybeans are greatly superior to other grain crops. 3. Looked at in terms of free market price, the real problem in a low purchase price for soybeans is also reflected.

1. Economically, it is necessary to give active support to the masses of commune members in mountain regions for the development of production. The mountain regions of Yunnan Province are the most hard up places in the province. Annually the state disburses relief at an average of more than 10 million yuan, an overwhelming majority of which is used in mountain regions. This year, for example, the state disbursed 40 million yuan and the province disbursed 19 million yuan for a total of more than 59 million yuan. Were all of these hardship subsidies used to help people in mountain regions develop production, this would have extremely far reaching and positive significance for a fundamental transformation of the poverty-stricken and backward life of the mountain people.

2. Readjustment of the purchase price paid for soybeans, and increase in the enthusiasm for the growing of soybeans among the masses of commune members. The conflict between the production value and price for soybeans is rather conspicuous and should be quickly studied and solved. Under present circumstances, the soybean price is really too low, which hurts development of production. It must be raised, and pricing must be done in terms of utility and market conditions. Price per jin should go from the present excess procurement price of 0.36 yuan per jin to 0.50 yuan per jin.

3. Development of soybean production is greatly helpful in the transformation of the backward economy of mountain regions. Were Yunnan Province to grow to 1 million mu of soybeans with yields per mu of 200 jin of soybeans (good yields can reach 300 to 400 jin), figuring a minimum market sale price of 0.50 yuan per jin, commune members' increased earnings could amount to 100 yuan per mu. Earnings from 1 million mu would therefore increase by 100 million yuan. These are very impressive earnings. Furthermore, in terms of fulfilling the needs of the material life of the people, 200 million jin of soybeans could be harvested from 1 million jin of land, and 150 million jin of beancake could be derived. At a beancake content of 50 percent protein, more than 70 million jin of protein could be obtained, and this would be very

beneficial for the growth of Yunnan Province's animal feed production and the promotion of great development in the livestock industry. Additionally, the stalks and stems, leaves, and residue of soybeans contain an abundance of nutrients for which the cost is low, and which is very suitable for feeding hogs, cattle, sheep, horses, and chickens. They contain abundant calcium, manganese, and sulfates. These ingredients play an important role for young livestock and sucking livestock. Therefore, active development of Yunnan Province's soybean production has extremely far reaching real significance for the transformation of poverty and backwardness in the mountain regions of Yunnan Province.

9432
CSO: 4007/405

LIBERAL LIVESTOCK POLICY INCREASES NUMBER OF ANIMALS

Kunming YUNNAN RIBAO in Chinese 1 Apr 81 p 1

[Report by Zho Weihua: "Big Development in Grazing-Livestock Breeding in Yunnan"]

[Text] In 1980, rural collective units and commune members achieved delightful results in breeding grazing-livestock, totaling more than 14,256,000 head, showing an increase over that of 1979 by almost 700,000. Of this total, about 1,000,000 were privately owned by commune members, showing an increase over that of 1979 by 1.6 times, accounting for 16.2 percent of the total number of large animals in the whole province. There were also more than 1,800,000 privately owned sheep, an increase of more than 80 percent over that of 1979, accounting for a quarter of the total number of sheep in Yunnan. The year 1980 marked a year of the fastest and most substantial growth in the number of privately owned grazing animals, large and small, over the past 2 decades. In some areas, not only the number of animals, but also the meat yield and the average weight of the animals were the highest in history.

The fast development of the breeding of grazing-livestock in Yunnan is attributable mainly to the adoption of a more liberal policy. Since 1979, the party committees and governments at the various levels in Yunnan have continued the implementation of the principles and policy of the party adopted since the 30 Plenum of the 11th CCP Central Committee. The party committee and people's government of Yunnan adopted measures to implement the policy governing private plots, private forage land, private mountain acreage, and privately owned animals, paving the way for the development of a private animal breeding business. While developing collective animal breeding, the commune members are encouraged and supported to raise their own livestock. Many prefectures and counties made it very clear that "it is permissible for commune members to raise livestock privately, with no restrictions on the type, the number and the gender of the animals."

In addition to liberalizing the policy governing animal breeding, the various localities also adopted concrete measures to encourage and support commune members to raise animals by their household members.

Many of the counties, communes and brigades of Zhaotong, Chuxiong, Yuxi, and Qujing prefectures and zhou adopted many measures to assist the commune members to solve their problems concerning the supply of young animals, such as assigning their households to raise collectively owned female animals, allowing them to keep the litters, selling at a discount the female animals and litters to the commune members, and allowing the commune members to borrow collectively owned female animals to breed their own young animals. Some of the food departments would resell breeding female animals to commune members. In the horse-breeding county of Tonghai, livestock marketplaces were opened to promote the trading of horses, resulting in an increase in the number of privately owned horses to more than 7,400, topping the highest record in history.

The development of the breeding of privately owned livestock not only increased the meat supply to the people in urban and rural areas, but also increased the income of some of the commune members. In Lufeng County, commune member Jen Xuefang of Heijing Commune was in debt in the amount of 800 yuan in 1979 due to the lack of adequate labor and food grain. But in 1980, she raised 6 head of cattle and sold 5 to the state for about 2,200 yuan. In addition, she was allowed to buy 640 catties of grain over and above her ration, and was given 8,000 work points for her contribution of manure. As a result, she was able to repay all her debts and deposit some money in a bank.

10,644
CSO: 4007/381

SUGAR INDUSTRY MUST CONTINUE TO DEVELOP

Kunming YUNNAN RIBAO in Chinese 4 Apr 81 p 2

[Article by the Study and Research Group of the Yunnan Economic Committee: "Increase the Production of Sugarcane and Sugar"]

[Text] Sugar is an indispensable food item, and the sugar industry is an important part of the food industry. Prior to the liberation, sugar was produced in Yunnan by native methods, and its consumption was not substantial. After the liberation, the modern sugar industry was established and developed, so that sugar production increased year after year. In 1980, the whole province produced more than 164,000 tons, about 7.1 times that of 1949. Since the 1970's, Yunnan has started to enjoy an annual surplus in sugar production of from 20,000 to 30,000 tons which has been supplied to other provinces.

The sugar industry in Yunnan relies mainly on sugarcane for its raw materials. Sugarcane is a semitropical plant. As many areas in Yunnan are below 1,400 meters in altitude and enjoy abundant rainfall, about 3,600,000 mu of the farmland are suitable for raising sugarcane. At present, there are about 700,000 mu of sugarcane in Yunnan, scattered in 104 counties under the jurisdiction of 12 prefectures and autonomous zhou, making Yunnan one of the eight major sugarcane-producing provinces in China. However, due to the Great Cultural Revolution, annual sugar production in Yunnan has dwindled to from 100,000 to 160,000 tons, downgrading Yunnan from the 3d to the 6th largest sugar producing province in China.

At present, Yunnan has 31 refineries, with an annual production capacity of 210,000 tons of white sugar and 50,000 tons of brown sugar. However, most of these refineries are operating only 65 percent of capacity due to the shortage of the raw material supply.

Following the improvement of the standard of living of the people in urban and rural areas, sugar consumption has increased year after year. It has become necessary to increase sugar production. Sugar is a product on which a high rate of tax is levied, amounting to about 380 yuan per ton, or about 3.8 million yuan per 10,000 tons. The yield of sugarcane is much higher than grain, averaging in 1979 about 2.8 tons per mu, valued at more than 120 yuan, almost double the value of grain yield. For this reason, the development of the sugar industry is beneficial both to the state and to the people. In view of the favorable conditions for raising sugarcane in Yunnan, we must try our utmost to increase our sugarcane acreage and sugar production to make greater contributions to the state. The following are the tasks to be done:

1. Strengthen leadership according to state policy to promote a great development in sugarcane production. Actual practice in past years shows that the adoption of a correct rural economic policy is a decisive factor affecting agricultural production. After summing up past experiences gained in sugarcane production, both positive and negative, the party committee and people's government of Yunnan have raised the sugarcane procurement prices and formulated a string of provisions to encourage sugarcane production, as follows: a rational rate of exchange was set between sugarcane and grain; a quota of yield was set, so that those who overfulfill the quota were entitled to some bonus; higher prices were offered for the sugarcane in quantities over and above the required quota; the profits earned by sugar refineries were shared by the provincial government, the county government, the refinery and the communes and production brigades concerned; and the sugarcane levied as tax in kind or procured by the state would entitle the tax-payer and seller the right to purchase quantities of chemical fertilizer. Thanks to these measures, the sugarcane farmers were able to exchange their sugarcane for grain and gain more economic benefit, thus becoming more enthusiastic in sugarcane production. In Dehongtai-Jingpo Nationality Autonomous Zhou, the sugar production increased from the 17,000 tons in 1979 to 26,900 tons.

2. Suitably concentrate on sugarcane production according to local conditions and raise the yield of sugarcane per unit area. In the past, due to enforcement of a policy of self-supporting in grain and sugarcane supply, it was impossible for sugarcane-producing areas to concentrate on sugarcane production, or for the grain-producing areas to concentrate on grain production, as each had to devote ample acreage for the production of the other crop. In the future, the local authorities should direct sugarcane-producing areas to appropriately concentrate on sugarcane production, while other areas concentrate on grain and other crops. This is one of the most important measures to solve the problem of the sugarcane shortage. In addition, efforts should be made to increase the yield of sugarcane fields. In Yunnan, the sugarcane acreage is about at par with that of Fujian Province, but the total sugar output amounts to only about one-half that of Fujian, mainly because of the low yield of sugarcane per unit area. If we can raise the average yield to the record level in the past (3.01 tons per mu), on the basis of our present sugarcane acreage we should be able to increase our sugarcane output by 60 percent, and if we can raise the average yield to that of Fujian Province, we would be able to double our sugar output.

3. Operate sugar refineries in full capacity and develop the potentials of old refineries. In the near future, we should refrain from building new sugar refineries, so that our existing refineries can operate in full capacity with an ample supply of sugarcane. On that basis, we should renovate, remodel and develop the potentials of our refineries. Most of our existing refineries are at the production capacity of 500 tons of sugar a day. While an investment of 7 million yuan is needed for building a new refinery of that capacity, only 1.2 million yuan is needed to remodel an existing refinery to increase its daily sugar production from 500 to 750 tons, showing a saving of 4.6 million yuan for bringing about an increase in sugar production of 500 tons a day. While increasing

the production of refined white sugar, we should also encourage the production of brown sugar in remote areas and in areas where sugarcane fields are widely scattered. With regard to the brown sugar mills which are located in areas covered by modern sugar refineries or which have been operating at a deficit over a long period of time, they should be shut down.

4. Make full use of raw materials and strengthen scientific research. It is estimated that for each 100,000 tons of sugar produced there is a by-product of 24,000 tons of syrup which can be used as raw material to produce liquor and alcohol, thus conserving 36 million catties of industrial grain. Another by-product is 160,000 tons of sugarcane waste which can be used as raw material to produce 36,000 tons of paper. There may be other ways to make fuller use of the by-products of sugar refineries. In addition, it is necessary to study and promote the development of excellent strains of sugarcane which are noted for their high yield, higher sugar content, and suitability for cultivation at different seasons. At present, there are sugar research institutes in both industrial and agricultural departments. It may be suitable for them to pool their efforts in order to bring their functions into fuller play. Similar research institutes should be established by major sugarcane-producing prefectures, counties and refineries to meet the need for quickly developing the sugar industry.

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CSO: 4007/381

LOW YIELD LATOSOL REGIONS IMPROVED

Kunming YUNNAN RIBAO in Chinese 5 Apr 81 p 2

[Article by Shen Zhongliang [3088 0112 5328]: "Agricultural Scientific and Technical Personnel Contribute Towards the Development of Agriculture; Our Province's Scientific Research Work To Improve Latosol Realizes Visible Achievements"]

[Text] For several years, our province's scientific and technical personnel in agriculture have been conducting scientific research work to improve latosol in the low yielding latosol regions. They have visibly improved the ability of low yielding latosol to produce increased yields.

Latosol is our province's major soil resource and low yielding farmland soil. The drylands of latosol have a steep slope, loss of water and soil is serious. The soil is infertile and lacks phosphrus, the tilling layer is shallow, the structure is poor. Latosol farmland constitutes half the area of cultivated land throughout the province, affecting the development of agricultural production in our province. Therefore, launching scientific research work to improve latosol has an important significance in changing the low yields of our province's agricultural crops, improving the yields of food grains and stimulating the overall development of agriculture, forestry and livestock production.

The scientific research work to improve latosol in our province began in 1963. At the beginning, the provincial agricultural science institute carried out scientific experiments in latosol at the Taipingshao production team of the Damogu Commune in Luliang County. After a year, the total yield of food grains of the Taipingshao production team multiplied, food grain rations for commune members increased from 365 jin to 510 jin, and improvement of latosol showed preliminary results. In 1975, the provincial science committee, the provincial agricultural department and the provincial agricultural science academy organized a provincial research and coordination and cooperation group to improve and utilize latosol. Ten sample fields for improvement of latosol were set up in Shaotong, Qujing, Luliang, Mile, Qiubei, Mengzi, Shitian, Guandu and Lingchang. The coordination and cooperation group carried out unified research based on the major problems in improving the latosol of the localities and was able to till deeply and bank fertilizers, apply phosphorous fertilizers and combine nitrogen and phosphorus, expand green manure, apply lime and zinc fertilizers and reform the cropping system. They popularized these achievements to 18,000 mu of sample fields (later, they developed to 130,000 mu). The average per mu yield of the sample fields increased from 200 and 300 jin to 500 and 600 jin. Per mu yield of corn the central sample fields of 3,000 mu of the Shuanglongying Commune in Qiubei County reached 800 jin, nearly a onefold increase over the original yield.

After improvement of latosol was popularized over large areas, the results have been visible. Statistics of the 190,000 mu of latosol throughout the province show that an increase of nearly 31 million jin was produced by the application of comprehensive measures of scientific research results and measures to increase agricultural yields and unit yield also visibly increased. Mile County is a county of our province in which the area of improvement of latosol has been relatively large. In 1979, this county improved an area of 100,000 mu of latosol. Under drought, the average per mu yield of food grains reached 483 jin, an increase of 12.3 percent over the bumper harvest year of 1978 and an increase of 130 jin over the 350 jin produced before the improvement of the soil.

9296
CSO: 4007/394

FLUE-CURED TOBACCO GROWING AREA EXPANDED

Beijing ZHONGGUO CAIMAO BAO [CHINA FINANCE AND TRADE JOURNAL] in Chinese 28 Apr 81 p 1

[Article by Li Long [2621 7893] and Lo Kaifu [5012 7030 1381]: "Yunnan Expands Flue-Cured Tobacco Growing Area; Half the Amount of Cigarette Tax To Be Returned to Communes and Brigades for Excess Deliveries"]

[Text] As of mid-March, Yunnan Province had put into effect a tobacco growing acreage of 865,000 mu, a 9.4 percent increase over last year.

In planning procurement prices for flue-cured tobacco this year, the Yunnan Provincial People's Government decided to increase prices paid for premium and medium quality tobacco, and to reduce somewhat the procurement price for second quality tobaccos. In addition, it decided to return 50 percent of the cigarette tax to communes and brigades for excess portions of tobacco delivered. Adoption of this measure has aroused the enthusiasm of commune members in tobacco growing areas. Flue-cured tobacco procurement units have dispatched people to six major production areas in the province to cooperate in doing a good job of tobacco production. All tobacco growing areas have set up and perfected some form of a system of responsibility for production of flue-cured tobacco and measures for scientific tobacco farming.

9432
CSO: 4007/406

BRIEFS

MORE STATE FARMS MAKING A PROFIT--With the implementation of various forms of financial and production responsibility systems, the number of Yunnan state farms making a profit grew from 7 in 1979 to 17 in 1980, while profits increased by more than 50 percent. During the same period, the number of state farms suffering a loss was reduced from 28 to 18, while losses dropped 74 percent. In 1979, the system suffered a loss of 8.26 million yuan; in 1980, it registered a gain of 23 million yuan. [Beijing ZHONGGUO NONGKEN No 3, 24 Mar 1981 p 19]

YUNNAN MINORITY TRAINING--Kunming, 13 Jun (XINHUA)--The first group of 84 Yi, Miao, Hani, Lisu, Bai, Naxi and Hui minority peasants are now taking a two-month course in agricultural techniques offered jointly by the Yunnan provincial nationalities affairs commission and the scientific and technical association in Kunming. The students who have all engaged in agrotechnical work in their areas will provide guidance to local peasants in scientific farming when they return to their home villages. An official in charge of the course said that the provincial government aims to help the 22 minority nationalities living in Yunnan Province develop their local economy. The course offers lectures on basic scientific knowledge of agriculture, animal husbandry and forestry. Specific topics include cultivation of corn, tomatoes, buckwheat and vegetables, and breeding of cattle, sheep and rabbits. The lectures come from the Yunnan Agricultural Institute, the Yunnan Forestry Institute and the provincial science commission. The course will enroll new students every two to three months and will continue indefinitely. [Text] [Beijing XINHUA in English 9120 GMT 13 Jun 81 OW]

CSO: 4020/207

SUCCESSFUL RESULTS FROM MASS CULTIVATION OF SHRIMP

Shanghai HAIYANG YUYE [MARINE FISHERIES] in Chinese No 5 1980 p 19

[Article by Xu Junzuo [1776 0689 0587] of the Zhejiang Provincial Ocean Aquatic Products Research Institute: "Experiment in Mass Cultivation of Young Shrimp in Zhejiang Produces Over 5 Million Young Shrimp"]

[Text] The Ocean Aquatic Products Research Institute of Zhejiang Province and the Wenling County Aquatic Products Bureau carried out an overall experiment to cultivate young shrimp this year on the basis of last year's experiment with shrimp shoals. They overcame this year's abnormal weather, low temperatures, and abundance of rain, an overly low specific gravity of seawater, and difficulties in cultivating bait and feed and obtained good results. They cultivated 5,145,000 young shrimp and completed the task of cultivation of 4 million young shrimp by 128.5 percent--6.35 times the amount of the largest number of young shrimp cultivated in past years. Major progress realized by the experiment is as follows:

A new record was created in the amount of young shrimp produced per unit body of water (a body of water is equal to 5.5 cubic meters). Of the 26 ponds used for cultivation this year, there were 12 ponds in which each cubic meter of water produced over 10,000 young shrimp, constituting 45.8 percent of the total. There were six ponds in which each cubic meter of water produced over 30,000 young shrimp. The highest yielding pond produced 71,300 young shrimp per cubic meter of water, greatly surpassing the goal of producing 10,000 young shrimp per cubic meter by cultivation. This provided experience for attempts to increase the percentage of yield.

The results of using powered shrimp meal to replace artificial cultivation by live bait were affirmed. This has opened up a new source of bait for young shrimp. For example, a 5.5 cubic meter pond, using shrimp powder alone as feed, can in the long run produce 95,000 young shrimp. The percentage of the yield is 27.2 percent, an average of 17,300 young shrimp per cubic meter of water.

The productivity of the total volume of water for cultivation has surpassed the guideline. This year, the total volume of water actually used for cultivation was 350 cubic meters. Calculating on the basis of the number of young shrimp cultivated, each cubic meter of water area used for cultivation produced an average of 14,700 young shrimp.

New progress has been made in the rate of utilization of parental shrimp and "multiple laying." On 2 April of this year, when laying of shrimp roe began, there were a total of 448 parent shrimp. Each shrimp produced an average of 11,500 young shrimp at the final count. Of the 5,145,000 young shrimp cultivated, 3,296,000 or 64.1 percent of the total, were incubated and nurtured from multiple layings.

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SEMIMONTHLY COLUMN REVIEWS CURRENT AGRICULTURAL SITUATION

Spring Farming Reminders Given

Hangzhou ZHEJIANG RIBAO in Chinese 21 May 81 p 2

[Article by Qiu Jiye [5941 1015 2814], Shen Yaqin [3088 7161 2953], and Li Shuilin [2621 3055 2651]

[Text] Around the time of "Xiaoman" [21 May] is when the farm activities of harvesting, sowing, tending, gathering, and nurturing are highly concentrated. Not losing opportunity for doing a good job of agricultural production at this time is extremely related to winning a bumper harvest for the year as a whole. By now the early rice crop has been transplanted to green manure fields throughout the province, and it is now being continuously transplanted to fields that matured in the spring. Already 11 million mu of early rice has been transplanted in completion of 64 percent of the rice acreage to be transplanted. Reports from everywhere characterize the transplanting of early rice seedlings this year as follows: rapid progress; sufficient number of seedlings, and many basic seedlings transplanted; quality of cultivation universally improved to lay an excellent foundation for early development of the early rice. However, in some places, a trend toward reduction in the early rice growing acreage has taken place. Every jurisdiction must direct its attention to this, do a good job, and assure implementation of planned early rice acreage. In late ripening fields of winter crops, the period of growth between transplanting of the early rice until maturity is short. Sufficient base fertilizer must be applied and every effort made to keep up with the season with little transplanting or no transplanting of "June fields" being done. Throughout the province, the more than 11.8 million mu of spring grain and rapeseeds are now at the stage of busy harvest. On the basis of past experience, with careful harvesting and threshing, spring grain yields of 20 to 30 jin more per mu may be had, and 10 to 12 jin more per mu of rapeseed can be harvested. All locales must give serious attention to harvesting, drying and storing in granaries, closing all rings tightly in order to reduce grain waste. Communes and brigades with a heavy work load where labor is short may promote piling of rapeseeds to achieve timely harvesting, keeping abreast of the season for bumper output and bumper harvest.

"Three parts seeds and seven parts care." The seeds are the foundation, and care is the key. Getting a bumper harvest from the early rice crop requires a great deal of effort on the "care" part. In places with a severe shortage of workforce, in order to guard against lack of care, the method of fertilizing first and tending later may be adopted. This year the number of rice stem borers that have wintered over is large, their period of activity long, and their threat to the early rice crop great. Disease and insect pest forecasting and reporting work must be done in a timely fashion, with close attention being given to insect pest trends, and prevention and control work being done well.

In addition to taking in hand the tasks of harvesting, sowing, and care, it is also necessary to give attention to doing a good job of preparations for sowing of the late rice crop. Every jurisdiction should make a general check of late crop rice seeds as soon as possible, and do a good job of assembling seeds to make up deficits and swapping seeds as necessary. In addition, it is necessary to leave a sufficient seedbed acreage and make other material preparations.

This year planting of cotton and luoma [4820 7802] was done on time throughout the province in a very busy sowing season, and seedlings are doing well. The acreage for April cotton seedlings was enlarged over last year, and the overall seedling situation is good. Nevertheless, it is still necessary to intensify cultivation and care during the seedling stage, removing seedlings, adding seedlings, and cultivating and fertilizing on time, doing a good job of disease and insect pest forecasting, and giving attention to prevention and control of diseases and insect pests. In sugarcane growing areas, a good job must be done of cultivation, fertilizing, and preventing and controlling diseases and insect pests in cane fields. The spring silkworms have entered the stage of feeding for silkworm strengthening, and because of recent high temperatures and dryness, mulberry leaves have lost much of their moisture. All jurisdictions must do a particularly good job of picking mulberry leaves and storing them, using every available means to preserve their freshness, and making appropriate increases in the number of times mulberry leaves are fed to the silkworms so that the silkworms eat to the full and eat well. This is one of the important actions to be taken to win high output of superior quality spring cocoons. Attention should also be given to prevention of accidental poisoning by insecticides to reduce losses. Once spring silkworm production is over, mulberry trees should be promptly cut for the summer and sufficient summer fertilizer given. Spring tea production is just about finished throughout the province. Now a good job must be done of preparations for picking summer tea and in intensifying fertilizers and pest control in tea plantations.

Sweet Potato Seedlings In Need of Care

Hangzhou ZHEJIANG RIBAO in Chinese 6 May 81 p 2

[Article by Tao Changxin [7118 1603 2450] and Li Shuilin [2621 3055 2651], Provincial Department of Agriculture]

[Excerpt] Sweet potatoes are one of the major food crops other than wheat and rice grown in Zhejiang Province. This year sweet potato planting was done earlier than last year; however, owing to much overcast and rainy weather and little sunshine early on, work to make the seedlings flourish is greatly needed. Suitable fertilization with phosphate and potash fertilizer should be done to prepare sufficiently strong seedlings for transplanting around 21 May.

Indifferent Development of Corn and Soybeans

Hangzhou ZHEJIANG RIBAO in Chinese 20 Apr 81 p 2

[Article by Fang Zaihui [2455 6528 6540] and Chen Mingda [7115, 2494 6671], Provincial Department of Agriculture]

[Excerpt] Dryland grain output cannot be ignored either. Sowing of spring soybeans is virtually complete. Owing to the low temperatures and large amount of rainfall earlier, sowing was delayed and rotting of shoots and missing seedlings is fairly common everywhere. Seedlings are rather weak. Prompt action should be taken to inspect seedlings and replace missing ones, to intensify fertilization and care of seedlings, and to prevent and control diseases and insect pests. Corn should be cultivated early and fertilized early. Increased amounts of phosphate and potash should be given the soybeans, and fertilization with nitrogenous fertilizer done during the seedling stage. Sweet potatoes are in a stage of vigorous growth, but in view of the small number of seedlings produced this year and the slow growth, seedling beds should be well fertilized and hilled up. Where sweet potato growth is insufficient, the method of using vines to grow vines may be used to accelerate reproduction of seedlings.

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TABLE OF CONTENTS OF 'XUMU SHOUYI XUEBAO' NO 1, 1981

Beijing XUMU SHOUYI XUEBAO [ACTA VETERINARIA ET ZOOTECHNICA SINICA] in Chinese No 1, Feb 81 inside back cover

[Text] A Study of Oak Leaf Poisoning in Cattle......Feng Zeguang [7458 3419 0342], Zhang Mingqian [1728 7686 6197] and Wei Zhuyan [7614 4554 1484], et al., all of the Department of Animal Husbandry and Veterinary Medicine, Sichuan Agricultural College (1)

Diagnosis of Chronic Fluorosis in Draft Buffaloes......Deng Shukai [6772 2885 7030], Yu Zhe [0151 0772] and Tan Weiguo [6223 5898 0948], all of the South China Agricultural College (9)

The Influence of Maternal Antibodies on the Immunity of Piglets Inoculated with Living Swine Erysipelas Vaccine...... Zheng Qingduan [6774 1987 4551], Xu Hanxiang [1776 3352 4382] and Pan Naizhen [3382 0035 3791], et al., all of the Animal Husbandry and Veterinary Medicine Institute, Jiangsu Academy of Agricultural Sciences (15)

A Preliminary Report on Reverse Indirect Hemagglutination Test of the Gosling Pest Virus......Xu Weiyan [1776 3634 3601], Nanjing Agricultural College; Zhou Yangsheng [0719 7122 3932], Jiangsu Agricultural College (23)

Studies on Pathogenesis of Oedema Disease in Swine...... Dong Zaizhen [5516 0375 3791], Animal Husbandry and Veterinary Medicine Institute, Shandong Academy of Agricultural Sciences (27)

Studies on an Attenuated Vaccine of *Salmonella abortusequi* ......Fang Xiaowen [2075 2556 2429], Yan Zirong [7051 3320 2837] and Zhang Shiyu [1728 1102 3768], et al., all of the Control Institute of Veterinary Bioproducts and Pharmaceuticals, Ministry of Agriculture (33)

Studies on the Lyophylized Combined Vaccine Against Swine Fever, Swine Erysipelas and Swine Pasteurellosis. IV. Improvement of Vaccine Preparation and Control......The Combined Vaccine Pilot Production Group (41)

Studies on Kidney Worm Disease. II. Studies on the Early Life Cycle of *Stephanurus dentatus*......Xiong Dashi [3574 1129 0099] and Jiang Jinshu [5592 6855 2579], both of the Beijing Agricultural University; Zhao Shuying [6392 2885 5391], Shanxi Agricultural University (47)

Notes on the Morphology of *Metorchis orientalis* Tanabe, 1921, and *M. taiwanensis* Morishita, 1929......Chen Peihui [7115 0160 1920], Beijing Second Medical College; Tang Zhongzhang [0781 0112 3864], Xiamen University, Fujian (51)

The Immunoenzymatic Technique for Rapid Diagnosis of Acute Cases of Swine Toxoplasmosis......Lin Jihuang [2651 4949 3552], Fan Wenming [5400 2429 2494] and Jiang Xueyu [3068 1331 0151], et al., all of the Animal Husbandry and Veterinary Medicine Institute, Jiangsu Academy of Agricultural Sciences (61)

The Udder Traits and Their Heritability in Dairy Cows...... Chen Youchun [7115 1635 2504], Yu Ruliang [0060 3067 2733] and Wu Fengchun [0702 7685 2504], et al., all of the Institute of Animal Husbandry, Chinese Academy of Agricultural Sciences (67)

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TABLE OF CONTENTS OF 'LINYE KEXUE' NO 1, 1981

Beijing LINYE KEXUE [SCIENTIA SILVAE SINICAE] in Chinese No 1, Feb 81 inside back cover

[Text] Studies on the Development of an Embryoid from *Eucalyptus callus*......Ouyang Quan [2962 7122 2938], Peng Haizhong [1756 1389 1813] and Li Qiquan [2621 0796 3123], all of the Qinzhou Institute of Forestry, Guangxi (1)

Studies on the Effects of Farmland Shelterbelt Network in Shenxian County of Hebei Province......Song Zhaomin [1345 0340 3046], Chen Jianye [7115 1696 2814], Yang Liwen [2799 4539 2429] and Zhao Zongzhe [6392 1350 0772], all of the Forest Research Institute, Chinese Academy of Forestry; Wei Lin [5898 2651] and Jiang Ailiang [3068 1947 5328], both of the Institute of Geography, Chinese Academy of Sciences (8)

Studies of the Yunnan Pine Bast Scale (I)......Qi Jingliang [4359 2529 5328] and Wang Yuying [3769 3768 5391], both of the Forest Research Institute, Yunnan Province (20)

A Cytological Study of the Heteroecious Phenomenon of Korean Pine Blister Rust (*Cronartium ribicola* Fisch.)......Tong Benqun [4547 2609 5028], Liaoning Institute of Silviculture (26)

A Study on the White Fly *Aleurotrachelus camelliae* Kuwana of *Camellia oleifera* Abel......Chen Zhuan [7115 4376 1344], Qingtian Oil Tea Research Institute, Zhejiang (30)

Studies on the Site Classification for Planting Area of Chinese Fir......Chinese Fir Cooperative Research Group (37)

A Preliminary Observation on the Flower-bud Initiation of the Chinese Fir in Nanpin, Fujian......Yu Xintuo [0205 2450 1185], Chen Cunji [7115 1317 0644], Bai Yuling [4101 5148 3781] and Huang Mingli [7806 6900 0448], all of the Fujian College of Forestry (46)

A Preliminary Study on the Climatic Regions of Chinese Fir Growth Areas......Sheng Weitong [4141 3555 1749], Forestry Research Institute, Chinese Academy of Forestry; Wang Lan [3769 1526] and Zhang Hongying [1728 3163 5391], both of the Computer Center, Chinese Academy of Sciences (50)

A Study on the Optimum Location of the Carring Beam in a Universal Truck for Tree-length Transportation......Han Demin [7281 1795 3046], Northeastern College of Forestry (58)

Synthesis and Application of Dehydroabietylamine and Its Acetate......Song Zhanqian [1345 3277 6197], Xiang Fengxian [0686 7685 0103], Gao Dehua [7559 1795 5478] and Hua Lanzhen [5478 5695 3791], all of the Research Institute of Chemical Processing of Forest Products, Chinese Academy of Forestry (69)

A Preliminary Study on the Early Growing Forecast of *Pinus sylvestris* var. *mongolica*......Chen Tieying [7115 6993 5391], et al. (74)

Introduction of Olive Trees to China......Xu Weiying [1776 4885 5391], Forest Research Institute, Chinese Academy of Forestry (78)

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On Simulating and the Quadrant Sample Plot Method......Lin Changgeng [2651 2490 1649], Nanjing College of Forest Products Industry (84)

How Do We Explore the Theory of Simulating a Sample Plot? ......Ma Jianwei [7456 1696 4850] and Li Shida [2621 0013 6671], both of the Northeastern College of Forestry (86)

Discussions on the Accuracy of Simulating the Sample Plot Method......Fang Xudong [2455 2485 2639], Hebei Special Forestry School (91)

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The Microclimate of the Poplar Shelterbelt......Hong Qifa [3163 0796 3127], Jilin Forestry College (96)

A Preliminary Study of the Longhorn Beetle (*Aristobia hispida* Saunders......Liu Yuanfu [0491 0337 4395] and Gu Maobin [7357 5399 1755], both of the Institute of Tropical Forestry, Chinese Academy of Forestry (105)

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[Text] A Simplified Formula and Method for Estimating the Metabolizable Energy Value and Nitrogen Corrected Metabolizable Energy Value in Chicken Ration......Peng Dahui [1756 1129 1920], Gansu Agricultural University (1)

Estimation of Selection Density of Small Population of Livestock......Dou Liansheng [4535 5571 0581], Shanxi Agricultural University (5)

The Selection of Yaks......Shi Jiyun, et al. (7)

The Effects of Improving Indigenous Cattle with the Qinchuan Breed--A Survey......Duan Yanbin, et al. (10)

Tests of Crossing Indigenous Cattle with Exotic Beef Breeds ......Pang Hongjun (12)

Test of Effectiveness on Grass Productivity by Applying Nitrogen Fertilizer to Liangshan Pastureland...... Ao Xuecheng (13)

Test on High Stubble Cutting of Comfrey Grass to Prevent Root Rot and Death of the Plant......Yuan Zhiquan (15)

Test of Feeding Pig with Dry Comfrey Grass Powder...... Ma Yuting (17)

Method of Propagating Comfrey with Axillary Buds...... The Comfrey Research Group, Linyi Agricultural School (18)

Test of Feeding Dairy Cattle with Introduced Indonesian Mung Been Green Fodder......Zheng Ji, et al. (20)

Test of Two-Breed Cross in Pigs......Fang Zhangming [2455 2874 2494], He Manyun [0149 2481 0061] and Guo Baozhong [6753 1405 1813], all of the Animal Husbandry Research Institute, Chinese Academy of Agricultural Sciences (21)

The Relation between the Optimal Breeding Time of the Sow and the pH Value of Its Vaginal Mucus......Hu Linger (23)

Test of Estrus Synchronization of Draft Cattle with Prostaglandin......Huang Ziqiang [7806 5261 1730], He Jilu [6320 7162 4389] and Liu Su [0491 3936], all of the Department of Veterinary Medicine, Guizhou Agricultural College; et al. (25)

The Effects on Reproductive Performance of Pregnant Sows with Different Nutrition Levels......Zhang Guofan [1728 0948 5400], Guo Shijian [6753 1709 0256] and Liu Yunsheng [0491 0061 3932], all of the Hongxinglong Scientific Research Institute, Heilongjiang Provincial Farm Bureau (27)

Analysis of Cases of Mortality of Piglets......Zhao Shiwen [6392 1709 2429], Linyi Regional Institute of Agricultural Sciences, Shandong (30)

The Effects on Boar Semen Preserved at Room Temperature and Its Fertility......Yu Dunfeng (32)

Question and Answer......Du Yuchuan [2629 3768 1557] (34)

The Control and Eradication of Wrinkled Sheep......Jiang Ying [5592 5391], Beijing Agricultural University (34)

The Calculation Method of Crop Rate of Meat Pigs...... Liao Xieguo [1675 0588 0948], Guangzhou State-run Joint Agricultural, Industrial and Commercial Company (35)

The Introduction of the Pedigree of the First Three Dairy Cows in the First Beijing Dairy Show......Gu Yanyu [7357 3601 1938], Beijing Dairy Cattle Institute (36)

The Making and Use of a Portable Cage Scale for Weighing Livestock......Huang Shunan, et al. (37)

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The General Conditions of Animal Husbandry and Grasslands in Japan......Ping Fang (38)

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Beijing ZIRAN ZIYUAN [NATURAL RESOURCES] in Chinese No 1, Mar 81 inside back cover

[Text] Cultivatable Wasteland Resources in China and Their Rational Development......Shi Yulin [4258 3768 2651], Kan Qingyu [1660 1987 4416] and Zhao Cunxing [6392 1317 5281], et al., all of the Natural Resources Comprehensive Survey Committee, Chinese Academy of Sciences (1)

A Preliminary Study of the Criteria of the Selection and Gradation of Rubber Plantations in Guangdong......Fu Xing [0265 5281], Office of Design, Guangdong Agricultural Reclamation Bureau (11)

The Productivity and Evaluation of Grasslands in Qinghai Province......Yu Xizhang [0205 6932 4545], Qinghai Main Grasslands Station (17)

The Main Features of Crop Climate in Xizang......Jiang Shikui [5592 0013 6652], Natural Resources Comprehensive Survey Committee, Chinese Academy of Sciences (31)

Estimation of the Total Radiation Resources of Maximum Sunny Days in China by Polynomial Regression Analysis...... Zhang Jiongyuan [1728 3518 6678], Feng Xuehua [7458 7185 5478] and Ni Jianhua [0242 1696 5478], all of the Natural Resources Comprehensive Survey Committee, Chinese Academy of Sciences (38)

Comparative Study of Photosynthetic Features of Wheat and Corn......Lai Shideng [6351 0013 4098], Liu Zuochang [0491 4373 2490], Yu Yanbo [0151 1750 3134] and An Qingkun [1344 1987 0981], all of the Institute of Genetics, Chinese Academy of Sciences (47)

The Establishment and Utilization of Data Bank of Resources ......Liu Yue [0491 1471] and Liang Qizhang [2733 0796 4545], both of the Institute of Geography, Chinese Academy of Sciences (52)

The Use of Water Resources and Ecological Environment in Arid Zones of China......Zhang Tianzeng [1728 1131 2582], Natural Resources Comprehensive Survey Committee, Chinese Academy of Sciences (62)

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Exploring the Potentialities to Increase the Forage Output in Agriculture so as to Improve the Role of Agriculture as a Forage Base......Li Mingze [2621 2494 0772], Department of Agricultural Economics, Shenyang Agricultural College (80)

On the Rational Development and Scientific Transformation of the Sanjiang Plain......He Yongqi [0149 3057 4388], Heilongjiang Institute of Natural Resources (83)

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Beijing ZHONGGUO SHOUYI ZAZHI [CHINESE JOURNAL OF VETERINARY MEDICINE] in Chinese No 2, 22 Feb 81 inside front cover

[Text] Main Contents

A Survey of *Setaria* spp in Cattle and a Preliminary Study on Experimental Infection of Laboratory Animals......Wang Guanqun [3769 0385 5028], Liu Jingyuan [0491 2529 0337] and Lin Guoquan [2651 0948 0356], et al., all of the Fujian Parasitology Research Institute (2)

A Survey of Coccidiosis in an Experimental Animal Farm in Beijing District......Jiang Jinshu [5592 6855 2579], Beijing Agricultural University (6)

Observation on the Clinical Effect of *Geranium wilfordii* Maxim Treated Piglet for Colibacillosis......Wu Yugui, et al. (8)

Anesthesia of Amphibian Animals......Quan Bingzhao, et al. (15)

Some Recent Advances in the Research of Fungal Diseases in Animals and Poultry (A Review)......Wang Jinglin [3769 2529 2651], Lanzhou Institute of Veterinary Medicine, Chinese Academy of Agricultural Sciences (29)

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Beijing NONGYE JINGJI WENTI [PROBLEMS OF AGRICULTURAL ECONOMICS] in Chinese No 3, 23 Mar 81 p 2

[Text] Main Contents

Structure of Agricultural Production in China......Yan Ruizhen [0917 3843 3791] and Zhou Zhixiang [0719 1807 4382] (3)

Road of Development of Rural Economy in China in the Light of the Changes in Rural Economic Structure in Densely-populated Areas......Guo Fang [6753 2455], Xue Baocang [5641 1405 0221] and Yan Xiaoan [7051 2556 1344] (11)

A Survey of Agro-economic Structure in Honghu County, Hubei Province......Li Dapeng [2621 1129 7720] (15)

Approaching the Change in Managerial Thought in Forestry from the Ecologic Balance Angle......Zhang Jianguo [1728 1696 0948] (21)

The Principles of Ecology and Agricultural Production in Shandong Province since the Founding of the People's Republic (II)......Xu Hong'ao [1776 3163 7663], Shandong Scientific and Technical Information Research Institute (25)

For Better Economic Results through Rational Allocation of Agricultural Investments......Bureau of Finance, Yunyang Prefecture, Hubei Province (31)

Heavy Sales Quotas and High Production Costs Hinder Further Increase in Production in High-yielding Grain Producing Counties ......Survey Team of State Commission on Agriculture (35)

The Experience of Shangezhuang Production Brigade in Improving Management......Kan Zhentang [0522 2182 1016] (38)

Some Problems in Implementing the Self-accounting System in State Farms--A Preliminary Study......Chen Jin [7115 6651] and Chen Ziyun [7115 4793 0061] (42)

A Preliminary Study of the Prerequisites for Turning a State Farm into an Agricultural-Industrial-Commercial Three-in-One Enterprise......Liu Liangyu [0491 5328 3768] (46)

Good Planning Helps Production in Mountainous Area--A Survey from No 3 Production Team of No 7 Production Brigade, Chujiang Commune, Dayi County......Cao Guanghui [2580 0342 2547] (49)

Giving Full Play to the Superiority of Area, Developing Pond-fish Breeding--An Investigation of Pond-fish Breeding of Foshan Prefecture in Guangdong Province......Agro-economic Structure Survey Team, South China Teachers' College (51)

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AUTHOR: DU Jiayao [2629 1367 3852]
ZOU Ju [6760 5282]

ORG: DU of the Guizhou Research Institute of Upland Agricultural Machinery; ZOU of Yunnan University

TITLE: "The Mathematical Model, Analytical Design and Theoretical Basis of High Speed and Ordinary Speed Plow Bottom Surface"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 1, 1981 pp 1-19

TEXT OF ENGLISH ABSTRACT: This paper presents a kind of mathematical model of high speed and ordinary speed plow surface formed by a combination of mathematical surfaces. According to the requirements for work performance of the upper and lower plow surfaces respectively, a satisfactory plow surface could be coupled from a family of helicoid and a family of hyperboloid of one sheet by the method of undetermined parameters of the family of surfaces. Because of the apparent geometrical properties and dynamic effects of these kinds of ruled surfaces which can satisfy the work requirements for the cultivating process, it may be advantageous for setting up a series of functional relationships among the characteristic geometrical parameters, soil parameters and dynamics parameters to use tillage mechanics. From this we probe a new path for the rationalization of the design method and the parameter selection of the plow surface.

[Continuation of NONGYE JIXIE XUEBAO No 1, 1981 pp 1-19]

Regarding some questions which are still in dispute at home and abroad, this paper briefly introduces some views and demonstrations formerly published by the author because they have the same theoretical basis as the mathematical model which the author suggests, e.g., the demonstration that it is more favorable to use an undevelopable ruled surface to form the plow moldboard than a ruled surface; the demonstration that the moldboard wing (or upper plow surface) formed by a portion of an oblique helicoid is more adaptable than that formed by a normal helicoid; the qualitative theories of soil traces and the optimization for design parameters of the plow surface by using tillage mechanics, etc.

AUTHOR: WANG Yongbin [3769 3057 1755]

ORG: Research Institute of Agricultural Machinery of Fujian Province

TITLE: "The Analysis of the Characteristics of the Water Turbine Pump and a Probe of the Way to Increase Its Efficiency"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 1, 1981 pp 20-30

TEXT OF ENGLISH ABSTRACT: The way to increase the efficiency of a water turbine pump is probed, the relation between the input and output water head ratio and various parameters of a water turbine and water pump is derived, and the effect of each parameter and its rules of variations on the water head ratio and efficiency is analyzed, resulting in the obtaining of the main way and method of increasing the efficiency of a water turbine pump and the criterion for choosing the optimum model. The theoretical conclusions have been verified by computing and testing of practical matched pumps.

AUTHOR: JIANG Yiyuan [5592 0076 0037]
WEN Jintao [3306 6930 3447]
XU Jiamei [6079 1367 5019]
et al.

ORG: All of the Northeast College of Agriculture

TITLE: "Exploratory Research of Main Functional Organs in a Rice Combine of 'Threshing Prior to Cutting' Type (Stripper Harvester)"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 1, 1981 pp 31-44

TEXT OF ENGLISH ABSTRACT: The former studies on the rice stripper harvester have encountered some obstacles as follows: big scattering loss of grain; limited to harvesting only the standing, tall, untangled crop with a uniform height of panicles over the ground; unacceptable lower ground speed of machine, etc.

In the present design the threshing belt, riveted with wire loops, is used, permitting a full descent to the entrance and benefiting the harvesting of dwarf plants. By means of the belt feeder matched with the figural reel, the plants can be gently deflected and fed into the thresher in a stretching state with the panicles forward, thus allowing the threshing process to be significantly prolonged. Consequently, hardly threshed, round-grained nonglutinous rice can be perfectly threshed and the ground speed increased 70 percent or more (or to 0.98 - 1.20 m/sec).

[Continuation of NONGYE JIXIE XUEBAO No 1, 1981 pp 31-44]

The machine's feed rate per meter of swath is higher than that of the conventional grain combine with rice modifications and the semi-feeding rice combine in before frost harvesting. In addition, the power consumption of the belt thresher, measured under field conditions, is less than that of either conventional or semi-feeding threshing apparatuses.

The tilted, threshed straw is cut by the floating cutter bar surmounted by reciprocating rakes with toothed edges, which at the same time collects the straw to the center, forming a window underneath the chassis. However, these devices worked unsatisfactorily in the higher ground speed of the machine, and, therefore, require further improvement.

The performances of feeding and threshing apparatuses are theoretically analyzed and the conclusions have been confirmed through field trials. However, the feeding devices cannot cope with the severely lodged crops, and the endurance of these organs remains yet to be examined.

AUTHOR: ZHOU Jiliang [0719 4764 5328]
SUN Weigong [1327 4850 1872]

ORG: Both of the Luoyang Tractor Research Institute

TITLE: "Load Sharing between the Gear Teeth and Some of the Problems in Gear Design"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 1, 1981 pp 45-52

TEXT OF ENGLISH ABSTRACT: When a pair of gears runs together having a contact ratio of between 1 ~2, at each end of the line of action there will be a portion at which two pairs of gear teeth will simultaneously come into engagement and each pair of teeth will then carry only a part of the load. This forms the basic premise of a design method to increase the contact strength of the teeth by designing the gears in such a way that the pitch point will be located only in regions where two pairs of gear teeth are in contact.

By means of the strain measurement made at the roots of the gear teeth, we have found the approximate relations governing the division of the load between the gear teeth meshing simultaneously together:
1. The division of load between the two pairs of teeth working simultaneously is dependent on many factors, including errors due to inaccuracy in manufacturing the gear teeth, rigidity of the teeth, magnitude of the load and location of the

[Continuation of NONGYE JIXIE XUEBAO No 1, 1981 pp 45-52]

contact point.

2. The load sharing as measured

(1) At point e within the double-tooth-contact region near the tip of the tooth, when the relative error of the base pitch is about 20 μ, as is generally the case, the maximum load shared can reach 70 percent.

(2) At point h within the double-tooth-contact region close to the topmost point H within the single-tooth-contact region, the load shared could reach 95 percent of the total.

(3) At point I within the double-tooth-contact region close to the lower point L within the single-tooth-contact region, the load shared may reach a maximum value of 80 percent.

3. From consideration of increasing the strength of the teeth, it would be considered suitable for the relative base pitch error to have a value of $+20\sim30\mu$, and it can be obtained by modifying the tooth profile of the addendum of driven gears.

4. In the design of gears with the pitch point located within the double-tooth-contact region, where the load shared is around 80 percent, the calculation of contact stress should be made on this basis. It should be neither 60 percent nor 50 percent.

5. Calculation of bending stress at the roots of the teeth shall be made with the total load at point H within the single-tooth-contact region.

AUTHOR: HUANG Weihan [7806 0251 3352]

ORG: Diesel Engine Exhaust Emission Research Group, Tianjin Internal Combustion Engine Research Institute

TITLE: "An Investigation of the Reduction of Exhaust Emissions from Series X105 Diesel Engines"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 1, 1981 pp 53-66

TEXT OF ENGLISH ABSTRACT: The control of toxic exhaust emissions from diesel engines is a very important task. This paper comprehensively presents the results of the experimental research in reducing exhaust pollutants from series X105 diesel engines. Under emission control conditions the exhaust emissions with BS $NO_x = 4.5\sim6.0$ g/ps.h, BS CO = $5.0\sim7.0$ g/ps.h and BS HC = 0.5 g/ps.h can be attained for NA and TC engines. These are all less than the limited values set for domestic diesel engines used in underground mining. When the output is constant, the increase of BSFC is less than 7 percent at rated power and maximum torque while the smoke density is satisfactory. The exhaust emission characteristics from series X105 diesel engines are given. The adaptibility of the compound combustion system with the combination of strong swirl and slow rate of fuel injection to low emissions is discussed.

AUTHOR: DONG Hao [5516 4110]

ORG: Jilin Institute of Engineering

TITLE: "The Penetrability and Self-sharpening of the Plowshare"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 1, 1981 pp 67-76

TEXT OF ENGLISH ABSTRACT: Based on the analysis of the forces exerted on the plowshare as the share moves in the ground, the relations of the penetrability of the share to the geometric factors (such as the angles applied in the mounting of the share, the states of the edge, etc.) are discussed in the present paper. The principle of the self-sharpening of the share edge is presented from the law of abrasion, and a detailed study of the share made of multilayer materials (e.g., by bead welding or plasma spraying) is carried out. From conditions of mechanics and the law of abrasion, a new formula is deduced to obtain good self-sharpening. This formula indicates the correlations among the factors including the thickness of the layers made from the high abrasion-resisting materials and the bearing materials, the relative coefficients of the abrasion-resistance between layers, and ground conditions. In addition, other new formulas are proposed to calculate the relative service life under conditions of the layers made from high abrasion-resisting materials on the face or back of the share.

AUTHOR: MU Qi [4476 3823]
FAN Lianying [5400 5571 5391]

ORG: Both of the Chinese Academy of Agricultural Mechanization Sciences

TITLE: "The Design and Experiment of the Impeller Type ULV Spraying Equipment"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 1, 1981 pp 77-85

TEXT OF ENGLISH ABSTRACT: This paper inquires into the related problems of the design and experiment of the air-blow-impeller type ultra-volume spraying equipment, the diameter and uniformity of the droplet suitable for ULV ground spraying, the key technique in realizing ULV ground spraying, the main factors affecting performance of the ULV spraying atomizer, the optimum field conditions for ULV spraying, etc. This paper provides the relevant technical data and some bases for the design and application of the ULV ground spraying equipment.

AUTHOR: GAO Xiansheng [7559 0341 5116]

ORG: Chinese Academy of Agricultural Mechanization Sciences

TITLE: "The Agricultural Energy Constituent and Some Problems in Development of the Agricultural Energy Sources in China"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 1, 1981 pp 86-95

TEXT OF ENGLISH A[illegible]. The author has studied the energy sources and the evolution, present and future of the agricultural energy of China, and also has analyzed special conditions on its constituent. All these will be described in this paper. The country's energy crisis, of which the oil shortage is the dominant factor, has been pounding "oil agriculture." This means that the agricultural production costs are heightened and the modernization of western agriculture has been meeting the new problem on the energy constituent.

The modernization of agriculture marks the rising of the consumption of chemical fertilizer, technical equipment and power fuel.

The shortage of oil and electricity in China has existed for a long time. The main points of this paper are to seek substitute energy and to expand the pluralistic constituent of energy according to the agricultural conditions.

9717
CSO: 4009/220

AUTHOR: ZHAO Renrong [6392 0088 6954]
JIA Fuyi [6328 4395 0034]
GAO Bingchen [2580 3521 6591]

ORG: All of Shenyang College of Agriculture

TITLE: "A Statistical Analysis of Blooming Habits of Rice"

SOURCE: Luda LIAONING NONGYE KEXUE [LIAONING AGRICULTURAL SCIENCES] in Chinese No 2, 15 Apr 81 pp 1-5

ABSTRACT: In order to study and utilize rice male sterile line for hybridization, it is necessary to master the biological characteristics of flowering in rice. Although there have been reports on the subject by foreign and domestic scientists, few of these adopt the method of statistical analysis. In 1945, one of the authors, ZHAO, carried out a study of blooming habits of early and late rice breeds with XU Chongmin [1776 1504 3046] in Yongan of Fujian Province. It was not until 1979, the study was continued in Shenyang of the north. Results of the northern portion of the project are reported.

AUTHOR: LU Qingshan [4151 1987 6365]
ZENG Xiangkuan [2582 4382 1401]

ORG: Both of Liaoning Provincial Academy of Agricultural Sciences

TITLE: "Research on High and Stable Yield Technology in High Elevation and Cold Mountains"

SOURCE: Luda LIAONING NONGYE KEXUE [LIAONING AGRICULTURAL SCIENCES] in Chinese No 2, 15 Apr 81 pp 13-17

ABSTRACT: In the northeastern mountains of Liaoning Province, there are 7,450,000 mu of crop land, amounting to 10 percent of the total area, 13 percent of the cultivated acreage of the province. This is the area of the smallest cropland per capita in the province, only 1.16 mu. The latitude and altitude are high; the yearly mean temperature is only 6-8°C, with an accumulated temperature of ≥ 10°C of 2800-3200°C per year. The objective of this study is to find ways of preventing cold damage to increase the unit yield. Methods of planting corn, the major crop of the region, in different stages, combining with fertilizer application and planting density etc. are experimented. On the basis of increasing phosphorus application and reasonable mixing of crops, active development of forestry and animal husbandry to create a better ecological environment for grain production and to provide a better and greater source of fertilizer, and to improve the capacity of withstanding natural calamities are proposed as a part of the conclusions of the study.

AUTHOR: JIN Anshi [6855 1344 0013]

ORG: Institute of Soil and Fertilizer Research, Liaoning Provincial Academy of Agricultural Sciences

TITLE: "Comments on the Progress, Problems, and Key Subjects of Research Concerning the Application of Nitrogen, Phosphorus, and Potassium Fertilizers in Liaoning Province"

SOURCE: Luda LIAONING NONGYE KEXUE [LIAONING AGRICULTURAL SCIENCES] in Chinese No 2, 15 Apr 81 pp 18-22

ABSTRACT: Since the theory of mineral nutrition of plants was proposed in the 1840's, the achievements from chemical fertilizer application have been frightening. The consumption of chemical fertilizer has increased 4-fold in the past 20 years. In recent years, attention switches toproblems of maximum economic benefit and environmental protection, however, such as pollution of water from nitro nitrogen and effects of N_2O on the ozone layer, etc. Some of these very important problems have not yet had time to be clarified. This paper reviews the progress and results of studies in Liaoning in the past 20 years on the efficiency of chemical fertilizers, the ratios for mixing compound fertilizer, techniques of applying nitrogen fertilizer to improve the utilization efficiency, and crop nutritional physiology and fertilizer application technique. Problems concern mainly an imbalance of the 3 elements and finding a suitable ratio for different areas. Finally, some aspects of chemical fertilizer urgently in need of emphasis are proposed.
This paper was received for publication on 14 Jun 80.

AUTHOR: DENG Xiaoshan [6772 1420 1472]
YU Shanli [0060 6365 4539]
GUO Jixiang [0948 7139 5046]
ZHAO Xuechun [6392 1331 2504]

ORG: DENG, YU of Dalian Municipal Institute of Agricultural Sciences; GUO, ZHAO of Institute of Forest Soils, Chinese Academy of Sciences

TITLE: "Brief Report of Experiment on the Forms of Transmission of Peanut Virus"

SOURCE: Luda LIAONING NONGYE KEXUE [LIAONING AGRICULTURAL SCIENCES] in Chinese No 2, 15 Apr 81 pp 25-26

ABSTRACT: In the most recent years, peanut virus diseases have occurred in all peanut producing areas of Liaoning, Shandong, Jiangsu, Anhui, Hebei, Henan, Beijing, etc. According to a survey of Dalian area in 1977-79, the yield reduction amounts to 10-20 percent. For the purpose of understanding their principle of occurrence and controlling their spreading, a project was launched to proceed with numerous field surveys, greenhouse experiments, extraction and purification of virus and electron microscopic observations. This paper reports the results of experimental spreading of virus, using methods of rubbing, graft of cuttings, close contact, etc. It has been confirmed, from the experiments, that both of the currently occuring peanut mottle virus and peanut mosaic virus may spread through grafting, rubbing, mechanical wounds, etc.
This paper was received for publication on 10 Oct 80.

AUTHOR: XU Wenru [6079 2429 0320]
QU Tianwen [2575 1131 2429]
GAO Shanjun [7559 1472 0193]
ZOU Guishen [6760 2710 3791]

ORG: All of Liaoning Provincial Institute of Sericultural Sciences

TITLE: "Preliminary Report of Research on Chemical Prevention and Control of Calosoma maximowiczi M."

SOURCE: Luda LIAONING NONGYE KEXUE [LIAONING AGRICULTURAL SCIENCES] in Chinese No 2, 15 Apr 81 p 27

ABSTRACT: Calosoma maximowiczi M. occurs in all sericulture areas of Liaoning, Henan, Shandong, Hebei, etc. In Liaoning, it damages tussah silkworms twice a year: not seriously in May-Jun, and very seriously in Aug, reaching above 90 percent in some years. In 1972-75, the authors carried out a study of preventing and controlling it with 7 different chemicals, including ethyl 1605, methyl 1605, 666, Phoxim, etc. Results of the experiment are reported.
This paper was received for publication on 11 Aug 80.

AUTHOR: FENG Qizhang [7458 0796 4545]
LIANG Zhongjiang [2733 1813 3068]
ZHAO Yulan [6392 3768 5695]

ORG: All of Fu County Center of Agricultural Sciences

TITLE: "Brief Report of Research on the Safe Planting Time of Sunflowers"

SOURCE: Luda LIAONING NONGYE KEXUE [LIAONING AGRICULTURAL SCIENCES] in Chinese No 2, 15 Apr 81 pp 33-34

ABSTRACT: The impression from production practice is that the occurrence of sunflower leaf spot disease is related to the planting time in the summer. The general belief is that the disease is severe if planting is early. It is not difficult to set a latest limit from calculating the accumulated temperature before the date of local first frost and the requirement of the breed. The yield is closely related to the planting time as well, however. Within a definite range, the earlier is the sunflower planted, the higher is the yield. The high yield early maturing breed 74-4-6 was used for planting on different dates (13 in all) in small plots to study the severity of the disease of the various plots. Results indicate that the most suitable planting time in Fu County is 5-10 Jul, taking into consideration the accumulated temperature requirement of the breed and the requirement of a below 80 percent relative humidity during the blooming stage.

6248
CSO: 4009/302

AUTHOR: GU Minghong [7357 6900 3163]
ZHU Lihong [2612 4539 3163]

ORG: GU of Jiangsu College of Agriculture, Yangzhou; ZHU of Nanjing College of Agriculture

TITLE: "A Genetic Analysis of Semidwarf Genes in Oryza sativa subsp. Keng [Geng]"

SOURCE: Beijing YICHUAN [HEREDITAS] in Chinese No 3, May 81 pp 20-23

ABSTRACT: In the last 2 decades, with the increase in fertilizer application, attention has been increasingly given to dwarf culture with respect to geng rice to achieve lodging resistance and high yield. At present, the genetic characteristics of some major dwarf xian materials have been more or less understood, but a corresponding knowledge of the dwarf geng materials is lacking. Since 1973, in the process of cultivating dwarf geng, the genetic characteristics of several dwarf geng materials have been studied. These studies have demonstrated that there are a great varieties of dwarf geng, ranging from 50 cm to about 100 cm in height, with dwarfism controlled by primary genes in some, and minor genes in others, and allelic in some and nonallelic in others. Due to the existence of a vast number of nonallelic dwarf genes among geng varieties, hybridization offsprings are likely to be taller than parents. Many existing semidwarf varieties in China are of Japanese or Korean origin, with uncomplicated genetic foundation. This is also one of the major difficulties of geng rice breeding work at present.

AUTHOR: LI Ju [2621 2667]
GUAN Chunyun [1357 2504]

ORG: Both of Hunan College of Agriculture, Changsha

TITLE: "A Preliminary Study on Heritability and Inheritance Correlation of the Main Characters of Rapseed (Brassica napus)"

SOURCE: Beijing YICHUAN [HEREDITAS] in Chinese No 3, May 81 pp 24-27

ABSTRACT: In the study on the heredity of quantitative characters, one of the major subjects is heritability and inheritance correlation, i.e. the ability of a parent to pass on a given character to its offsprings. Genetic correlation provides the estimate and is not interfered by the environment. Heritability of some characters is low and the result of direct selection will be poor, but they may be combined with some highly heritable characters for indirect selection in the hope of obtaining materials containing the desired characters. Genetic correlation studies on rice, wheat, cotton, soybean etc. have been reported here and abroad, but not on rape. This paper reports a study by the authors on the heritability of major characters of the Brassica napus type rape varieties by means of computing the genetic correlation as well as environmental correlation.

AUTHOR: WANG Jingju [3769 2417 7467]
HU Daofen [5170 6670 5358]
WANG Huaiming [3769 2037 0682]
TANG Yunlian [3282 0061 5571]

ORG: WANG of Institute of Botany, Chinese Academy of Sciences, Beijing; HU, WANG, TANG of Institute of Crops, Beijing Municipal Academy of Agricultural Sciences

TITLE: "Studies on Increasing the Induction Frequency of Pollen Callus in Wheat"

SOURCE: Beijing YICHUAN [HEREDITAS] in Chinese No 3, May 81 pp 28-29, 42

ABSTRACT: Since the successful cultivation of haploids through anther culture by Guha and Maheshwari in 1964, pollen plants close to a hundred types have been obtained by scientists all over the world, but the induction frequency of most species remains very low to present an obstacle in the application of this technique. This paper introduces a method of floating culture and pretreatment with a highly permeating solution, applied by the authors to increase the induction frequency of callus plants of wheat. The method and the results are described.

AUTHOR: YI Huying [0122 5706 5391]

ORG: Northwest Institute of Water and Soil Conservation, Chinese Academy of Sciences, Wugong, Shaanxi Province

TITLE: "Investigation of the Determination of Irradiation Effects in Root Tip Cell Chromosomes of Wheat by Micronucleus Test"

SOURCE: Beijing YICHUAN [HEREDITAS] in Chinese No 3, May 81 pp 30-31, 42

ABSTRACT: In studies on the early diagnosis of radiation disease, protection from radiation, radiation genetics, and mutagenic induction effect of radiation, the the chromosome aberration analysis method is commonly regarded as highly sensitive and reliable. The method currently in use involves complicated steps and the efficiency is not very high. These shortcomings have limited its application in practice. In the early 70's, Matter and Schimid proposed the micronucleus test in the place of chromosome aberration analysis for the diagnosis of radiation injury of humans and mammals. The objective of this paper is to deterimine its feasibility for testing plants. The relationship between the micronucleus rate, the chromosome aberration rate, and the radiation dosage, and the relationship between the micronucleus rate and the chromosome aberration rate are compared and analyzed to provide data for the application of the micronucleus test to plants. Dried wheat seeds of various varieties are used for $^{60}\mathrm{Co}\ \gamma$ irradiation for this study.

AUTHOR: CHEN Lianwen [7115 6647 2429]

ORG: Songhuajiang Branch, Heilongjiang Provincial Seed Company, Harbin

TITLE: "Inheritance of Male Sterility in Maize"

SOURCE: Beijing YICHUAN [HEREDITAS] in Chinese No 3, May 81 pp 32-35

ABSTRACT: In the 3 decades since the genetic theory of male sterility in plants was first proposed, there have been numerous studies on the subject and some new genetic phenomena of male sterility have been discovered. These new phenonmana cannot be explained with the original theory; therefore, some new viewpoints and theories have again been proposed. For the purpose of further perfecting the theory to promote the research work on male sterility in animals and plants, the author and colleagues launched a research project in 1967 on the inheritance of male sterility of the T type sterile line of corn. By 1980, the project has persisted 11 years, with a period of interruption between 74 and 76. There were 18 growth cycles; 7 of these were in Hainan Island. The research method and the results are reported.

AUTHOR: WU Miaoxin [0702 1181 8590]

ORG: Guangxi Academy of Agricultural Sciences

TITLE: "A Superficial View on the Distribution of Wild Rice in Guangxi Province of China"

SOURCE: Beijing YICHUAN [HEREDITAS] in Chinese No 3, May 81 pp 36-37

ABSTRACT: Scientists of the world divide rice cultivars into Oryza glaberrima, which has a limited distribution in West Africa, and O. sativa which is of Asian origin and has now a worldwide distribution. China has had more than 6700 years of rice culture and there have been many studies on the distant ancestry of rice with very different conclusions. In 1978-79, a wild rice survey cooperative group was organised by the Bureau of Agriculture of Guangxi Zhuang Nationality Autonomous Region, and 3671 persons participated in the project. They journeyed a total of 14,000 km, covering 736 communes of 85 counties of the region. The project discloses that in Guangxi there are 2 types of wild rice: Oryza sativa L.f. spontanea, which is the ordinary wild rice, and O. officinalis Wall which includes the medicinal varieties. This paper introduces the results of the study in aspects concerning their areas of distribution, the geographical characteristics of their distribution, their different ecological environments, and the extensive natural acreages, above 500 mu in some counties, of either types.

6248
CSO: 4009/313

AUTHOR: HUANG Dongmai [7806 2639 6701]
GAO Jiahua [7559 1367 7520]
ZHU Peili [2612 1014 4539]

ORG: All of the Institute of Soils and Fertilizers, Jiangsu Academy of Agricultural Science

TITLE: "The Transformation and Distribution of Organic and Inorganic Fertilizer Nitrogen in Rice-Soil System"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 2, May 81 pp 107-121

TEXT OF ENGLISH ABSTRACT: The application of chemical fertilizer combined with farm manure is popularly practiced in Chinese farming. In order to clarify the characteristics of nitrogen supply in such a fertilization system, pot experiments were conducted using ^{15}N labeled crotalaria and ammonium sulfate as organic and inorganic nitrogen sources respectively. Some preliminary results are summarized as follows:
1. Rice plants utilized much more soil nitrogen than fertilizer nitrogen. In all treatments only about one-third of the nitrogen assimilated by the rice plant came from the fertilizers. The ratio of soil nitrogen to fertilizer nitrogen taken up by rice plants was closely related to the kinds of soil. In general, the more fertile the soil, the more soil nitrogen was assimilated by the rice plant.

[Continuation of TURANG XUEBAO No 2, May 81 pp 107-121]

2. As ammonium sulfate was applied with crotalaria, both at the same nitrogen level, rice absorbed relatively more $(NH_4)_2SO_4$-N in the first 30 days after transplanting. Thereafter, it absorbed approximately equal amounts of nitrogen coming from ammonium sulfate and crotalaria, with the available nitrogen supplying capacity of crotalaria apparently potentially similar to that of ammonium sulfate from the maximum tillering stage through maturity. In addition, the availability of ammonium sulfate nitrogen was revealed to be more long lasting in the presence of crotalaria.
3. Good correlations were found between the A-value and the crop yields, as well as soil nitrogen uptake by rice plants.
4. Comparative studies on different soils by application of different nitrogen sources showed that the priming effect only took place in the case of the application of chemical nitrogen fertilizer. This effect under green manure application will be studied in the future.
5. Experimental results showed that in combined fertilization, the inorganic nitrogen fertilizer promoted the mineralization of organic nitrogen in green manure, and the amount of immobilized inorganic nitrogen was considerably increased by the existence of organic nitrogen. These mutual effects seemed to be an essential characteristic of such a fertilization system. As a result, the availability of organic fertilizer nitrogen was increased and more of the inorganic nitrogen applied was immobilized and kept in the soil.
6. Different fertilization changed the status of the nitrogen balance sheet. Basal application of crotalaria showed that the amount of residual crotalaria nitrogen

[Continuation of TURANG XUEBAO No 2, May 81 pp 107-121]

retained in the soil was greater than the amount of crotalaria nitrogen taken up by rice plants. On the other hand, in the ammonium sulfate treatment the amount of ammonium sulfate nitrogen uptake by rice plants was greater than the immobilized portion. The nitrogen balance sheet of combined application showed an intermediate feature between that of crotalaria and ammonium sulfate applied alone. In addition, it was indicated that the loss of chemical nitrogen could be reduced when it was dressed with organic fertilizers.

AUTHOR: GONG Zitong [7895 1311 0681]
WEI Qifan [7279 0796 3879]
HUANG Yue [7806 6885]
WU Zhidong [0702 1807 2639]

ORG: All of the Institute of Soil Science, Chinese Academy of Sciences, Nanjing

TITLE: "The Problem of Secondary Gleization of Paddy Soil"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 2, May 81 pp 122-136

TEXT OF ENGLISH ABSTRACT: Following the development of a water irrigation project and the extending of double cropping rice without proper soil management measures, the area of gleyed paddy soil is expanding. This has been found in Guangdong, Guangxi, Hunan, Hubei, Jiangsu and Shanghai. According to imperfect statistical data, the area of gleyed paddy soil has increased by 20 percent in some regions in the past 10 years or so. The process by which a normal paddy soil profile turns into a gleyed one is generally called secondary gleization. In some places, the term secondary gleization is called "waterlogged injury." Due to the low soil temperature in spring, an inadequate supply of available nutrients, especially phosphorus and potassium, and the accumulation of reducing matter, the growth of rice seedlings is retarded, the maturity of rice plants is delayed, and the proportion of empty grain is increased. All these may result in a decrease of 750-1500 kg/hect of grain in each rice yield.

Due to the diversity in relief and parent material, the morphology of secondary gleyed paddy soil is not always the same. The most common phenomenon is the gleization in the plowpan or in the deeper layer just under the plowpan. The gleying plowpan (Pg), or the secondary gleying horizon which shows a color of dark gray, is generally 8-10 cm thick and it is under strongly reducing conditions, even during the season under upland crops when the redox potential is below 200 mv. The plowpan is much more compact than normal paddy soil, so the permeability of the soil is very poor. Due to the diversity in the intensity and development of secondary gleization, the mobility of iron and manganese in the paddy soil profile is also idfferent. The content of total iron in the secondary gleying horizon (Pg) and the horizon on its top is low, but the ratio of active iron to total iron is high in comparison with the B and Bc horizons. As a result of gleization, the percentage of reduced iron is high, and ferrous iron may amount to 5 percent of the total iron content. According to the comparison of the six pairs of samples from Jiangsu and Hunan provinces, the content of amorphous Si and the ratio of amorphous Si to total Si in the secondary gleyed paddy soil are lower than those in corresponding normal paddy soil.

Alternation of reduction and oxidation is one of the characteristics of the process of paddy soil formation. Based on this viewpoint, the soils are divided into three subtypes: oxidazing, redoxing and reducing types. Secondary gleization can take place in all three of these types of paddy soil. For example, the arrangement of

the soil horizon of a secondary gleyed profile developed from oxidazing paddy soil is A-Pg-B-Bc. In the Pg horizon, ferrous iron is about 100 mg/100 g soil and in the corresponding normal paddy soil it is only several mg. But the area of this type of secondary gleyed soil is rather limited. The profile horizon arrangement of secondary gleyed paddy soil developed from the typical redoxing paddy soil is A-Pg-WB-B or A-Pg-Bg-B. The ferrous iron in the Pg horizon ranges from 100-200 mg/100 g soil. The area of secondary gleyed paddy soil of this type is quite large. On the typical profile of reducing paddy soil (A-P-Bg-G), the characteristics of secondary gleization are not evident. In cases of improper irrigation, the rising of the groundwater table may often induce the gleization of paddy soil.

Factors inducing soil gleization are rather complicated. The main cause is poor permeability, especially in the plowpan layer where its porosity is low. The level of groundwater, distance of the rice field to the irrigation ditch, and the occurrence of sandy and clay horizons in the soil profile also affect the permeability of soil.

However, soil gleization also results from environmental conditions. The first such condition is poor drainage, especially under irrigation. The second is an improper cultivation system, such as the adoption of double cropping of rice, which may prolong the waterlogging period. The third is shallow plowing, which may thicken the plowpan. Under the conditions mentioned above, secondary gleization

[Continuation of TURANG XUEBAO No 2, May 81 pp 122-136]

may take place readily on most paddy soils with poor permeability. Therefore, better drainage, proper rotation of rice and upland crops, and improvement of cultivation measures will be conducive to eliminating the Pg horizon and increasing the crop yield.

AUTHOR: ZHOU Likai [0719 4409 1956]
ZHANG Zhiming [1728 1807 2494]
CHEN Enfeng [7115 1869 7685]

ORG: All of the Institute of Forestry and Pedology, Chinese Academy of Sciences

TITLE: "Enzymatic Activities in Black Soils"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 2, May 81 pp 158-166

TEXT OF ENGLISH ABSTRACT: In this paper, the activities of enzymes (catalase, polyphenol oxidase, invertase, urease, alkaline and neutral phosphatases) in black soils with different rates of fertility and the correlations between enzymatic activities on the one hand and soil humic substances and other elements of fertility on the other hand are discussed. It has been shown that:
1. Among the six kinds of enzymes tested, most of the enzymes can be significantly correlated with soil organic matter or its components. Their activities can be used as an index to characterize the contents and status of organic matter. Polyphenol oxidase has a negative significant correlation with C/N and humic acid/fulvic acid. Its activity characterizes the humification degree of humic substances. The activities of various kinds of enzymes characterize specifically or compositely the soil carbon, nitrogen and phosphorus status, cation exchange capacity and aeration status. In addition, there are some definite correlations among various kinds of soil enzymes.

[Continuation of TURANG XUEBAO No 2, May 81 pp 158-166]

2. In black soils with higher fertility, the activities of catalase, invertase and urease are intenser and those of polyphenol oxidase and phosphatase are weaker than those in soils with lower fertility. This means that the activities of the former three kinds of enzymes can be used to characterize the level of soil fertility to a certain extent, and those of the latter two kinds of enzymes have a negative correlation with the humification degree of humic substances.
3. The activities of soil enzymes (except those of polyphenol oxidase) are weakened with greater soil depth.

It seems that, as for black soils, enzymatic activities can be used as a supplementary index to characterize the degree of soil cultivation.

AUTHOR: CHEN Ziming [7115 1311 2494]

ORG: Institute of Soils and Fertilizers, Chinese Academy of Agricultural Science

TITLE: "Studies on the Relationship between the Characteristics of Soil Structure and Soil Fertility of Spongy Fields"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 2, May 81 pp 167-175

TEXT OF ENGLISH ABSTRACT: Soil structure is one of the important factors of soil fertility. This paper deals with the effect of the application of organic fertilizer, deep plowing and the utilization of soil transported from other places on the formation of soil structure.

These measures not only increased waterstable granular aggregates, but also increased the microaggregates and temporary aggregates. The solum structure of a soil layer of 0-50 cm was changed due to the variation of the soil structure properties, and three layers of different structure were formed. Therefore, the changes in soil structure induced the change of the regime of water and air in soil, the total pores approximated to 60 percent, of which big pores were about 15 percent, soil aeration was improved significantly below the soil layer of 20 cm, and the soil waterholding capacity was increased 3-5 percent. The improvement in soil structure may plan an important role in providing better soil nutrient

[Continuation of TURANG XUEBAO No 2, May 81 pp 167-175]

conditions and stimulating the activity of soil microbes of the subsoil.

Because of the raising of soil fertility and improvement of environmental conditions of plant root systems, many more plant roots can grow in the soil layer of 35-60 cm, which will provide a sound basis for high and stable yield farming.

AUTHOR: XU Binbin [1776 1755 1755]

ORG: Institute of Soil Science, Chinese Academy of Sciences, Nanjing

TITLE: "Numerical Classification of Soils and Land Use by Spectral Data"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 2, May 81 pp 176-184

TEXT OF ENGLISH ABSTRACT: Based on the spectral data obtained from laboratory and field experiments in the Tengchong spectral test area, the automatic identification and classification of soil types and land use patterns has been carried out by the use of principal component analysis. Two principal component equations based on the laboratory data can be used to identify soil types developed from different parent materials and of different land use patterns. Two other principal component equations based on field data can be used to distinguish different land use patterns, such as fallow, bare land, wheat field and water, etc.

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